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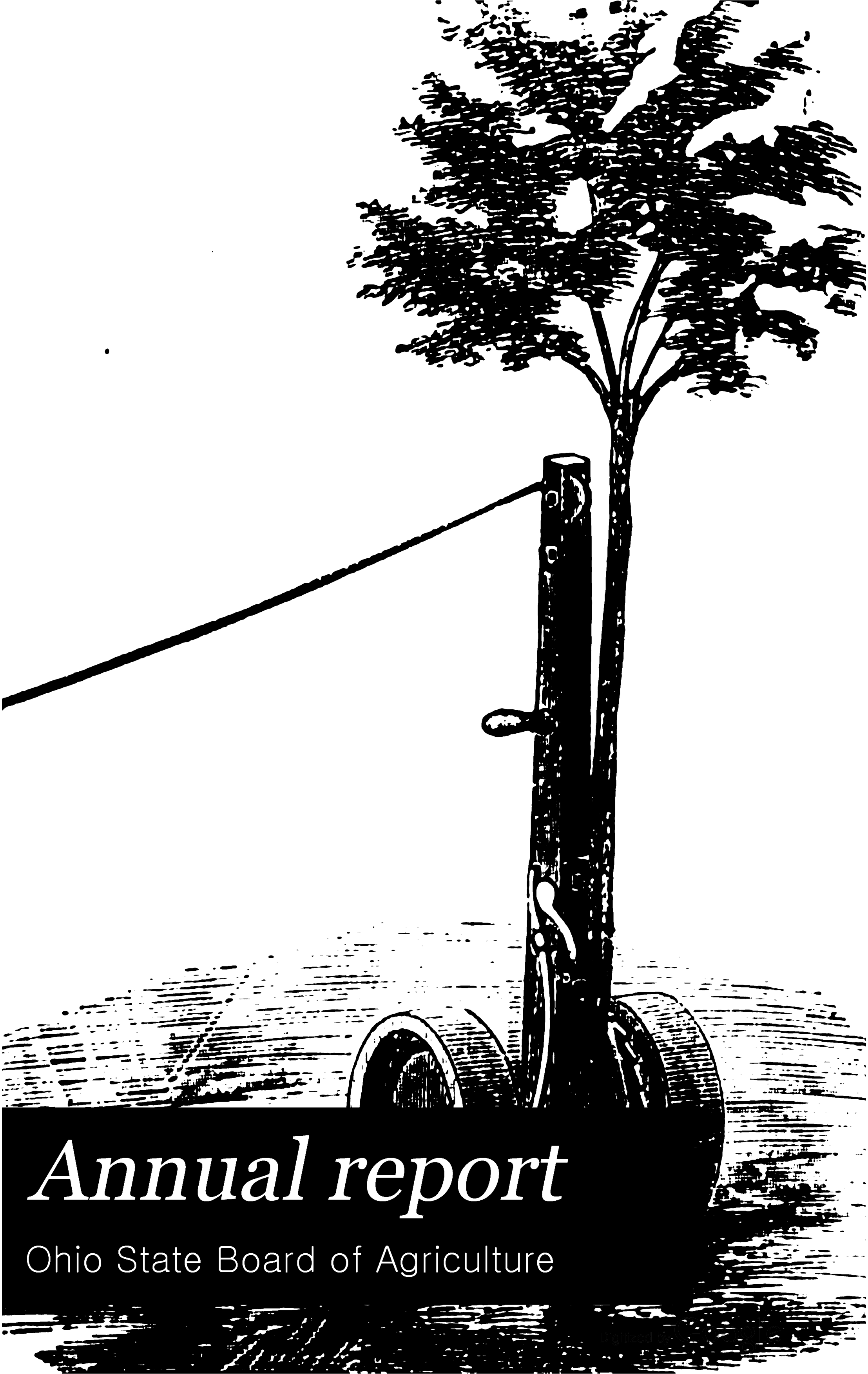

Annual report

Ohio State Board of Agriculture

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TWENTY-THIRD ANNUAL REPORT

OF THE

Ohio State Board of Agriculture,

WITH

AN ABSTRACT OF THE PROCEEDINGS

OF THE

COUNTY AGRICULTURAL SOCIETIES,

TO THE

GENERAL ASSEMBLY OF OHIO,

FOR THE YEAR 1868.

COLUMBUS:
COLUMBUS PRINTING COMPANY, STATE PRINTERS.
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FINANCIAL REPORT

OF

TREASURER AND RECORDING SECRETARY.

[Extract.]

RECEIPTS.

Balance on hand January 1, 1868			$19,177 93
Receipts in 1868, from all sources, as follows:			
State appropriation		$3,000 00	
City of Toledo (subscription)		5,000 00	
Sundry receipts		1,130 40	
Sale of refreshment stands, &c		3,905 00	
Admission tickets, 1st day	$374 50		
" " 2d day	1,266 75		
" " 3d day	6,546 50		
" " 4th day	6,002 75		
" " 5th day	1,415 75		
		$15,606 25	
			$28,641 65
Total receipts			$47,819 58

DISBURSEMENTS.

For lumber and other materials	$8,407 84	
labor and assistance	7,844 56	
forage and refreshments	1,163 20	
expenses of the Board	1,096 80	
printing and advertising	1,752 10	
telegraph, postage and express	350 52	
premiums, medals and diplomas	9,728 50	
Corresponding Secretary	2,500 00	
Recording Secretary	500 00	
office expenses, library, &c	457 65	
contingent expenses	904 87	
profit and loss account	229 00	
Total disbursements		$34,935 04
Balance on hand		$12,884 54

The above balance consists of the following:

Cash in hands of Treasurer	$1,390 54	
Less checks drawn but not redeemed	506 00	
		$884 54
Cash assets		10,000 00
Balance of note of the Montgomery County Agricultural Society		2,000 00
		$12,884 54

We find the accounts to be correctly kept, with approved vouchers for all disbursements, according to regulations.

To the assets above of	$12,884 54
Should be added the estimated value of the lumber in use at the Toledo fair grounds	5,000 00
Total assets	$17,884 54

Respectfully submitted,
N. J. TURNEY,
WM. LANG,
D. McMILLAN,
Auditing Committee.

COLUMBUS, O., January 5, 1869.

LIST OF MEMBERS OF BOARD FOR TWENTY YEARS.

1850—FAIR AT CINCINNATI.

M. L. Sullivant, President	Columbus.	J. T. Pugsley	Convenience.
*S. Medary, Treasurer	Columbus.	*Arthur Watts	Chillicothe.
M. B. Bateham, Secretary	Columbus.	J. M. Edwards	Canfield.
*D. Lapham	Cincinnati.	C. Springer	Meadow Farm.
F. R. Elliott	Cleveland.	J. G. Gest	Xenia.

Receipts, $8,036 18.

1851—FAIR AT COLUMBUS.

M. L. Sullivant, President	Columbus.	S. Halloway	St. Clairsville.
*S. Medary, Treasurer	Columbus.	Allen Trimble	Hillsboro.
*J. G. Gest, Recording Sec'y	Xenia.	C. Springer	Meadow Farm.
*W. W. Mather, Cor. Sec'y	Columbus.	J. M. Edwards	Canfield.
F. R. Elliott	Cleveland.	*Arthur Watts	Chillicothe.
J. T. Pugsley	Convenience.		

Receipts, $8,204 09.

1852—FAIR AT CLEVELAND.

*Arthur Watts, President	Chillicothe.	Allen Trimble	Hillsboro.
*S. Medary, Treasurer	Columbus.	J. M. Edwards	Canfield.
*J. G. Gest, Recording Sec'y	Xenia.	*Wm. Case	Cleveland.
*W. W. Mather, Cor. Sec'y	Columbus.	*Philo Adams	Huron.
C. Springer	Meadow Farm.	*R. W. Musgrave	Sulphur Springs.

Receipts, $13,260.

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* Deceased.

1853—FAIR AT DAYTON.

*S. Medary, President	Columbus.
M. L. Sullivant, Treasurer	Columbus.
*J. G. Gest, Recording Sec'y	Xenia.
G. Sprague, Cor. Secretary	Columbus.
*Wm. Case	Cleveland.
*Philo Adams	Huron.
*R. W. Musgrave	Sulphur Springs.
R. W. Steele	Dayton.
Wm. H. Ladd	Richmond.
D. McIntosh	Shalersville.
J. T. Worthington	Chillicothe.

Receipts, $13,996 37.

1854—FAIR AT NEWARK.

*R. W. Musgrave, Pres't.	Sulphur Springs.
Jos. Sullivant, Treasurer	Columbus.
Jas. L. Cox, Recording Sec'y	Zanesville.
G. Sprague, Cor. Sec'y	Columbus.
W. H. Ladd	Richmond.
J. T. Worthington	Chillicothe.
D. McIntosh	Shalersville.
R. W. Steele	Dayton.
*J. G. Gest	Xenia.
J. K. Green	Carthage.
B. Stedman	Cleveland.

Receipts, $8,824 58.

1855—FAIR AT COLUMBUS.

J. T. Worthington, Pres't	Chillicothe.
Jos. Sullivant, Treasurer	Columbus.
Jno. K. Green, Rec. Sec'y	Carthage.
G. Sprague, Cor. Sec'y	Columbus.
R. W. Steele	Dayton.
*R. W. Musgrave	Sulphur Springs.
B. Stedman	Cleveland.
J. L. Cox	Zanesville.
W. H. Ladd	Richmond.
Alex. Waddle	South Charleston.
Abel Krum	Cherry Valley.

Receipts, $9,745 54.

1856—FAIR AT CLEVELAND.

W. H. Ladd, President	Richmond.
Lucian Buttles, Treasurer	Columbus.
Jno. K. Green, Rec. Sec'y	Carthage.
G. Sprague, Cor. Sec'y	Columbus.
Jas. T. Worthington	Chillicothe.
*R. W. Musgrave	Sulphur Springs.
R. W. Steele	Dayton.
B. Stedman	Cleveland.
Alex. Waddle	South Charleston.
Abel Krum	Cherry Valley.
G. W. Barker	Marietta.

Receipts, $16,649 20.

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* Deceased.

1857—FAIR AT CINCINNATI.

Alex. Waddle, Pres't...South Charleston.
Lucian Buttles, Treasurer.....Columbus.
J. M. Millikin, Rec. Sec'y......Hamilton.
J. H. Klippart, Cor. Sec'y.....Columbus.
Luther Smith...............West Liberty.
John K. Green.................Carthage.
B. Stedman.....................Cleveland.
A. Krum.................Cherry Valley.
G. W. Barker.....................Marietta.
*R. W. Musgrave........Sulphur Springs.
Thomas S. Webb...............Massillon.

Receipts, $17,530 75.

1858—FAIR AT SANDUSKY.

John M. Millikin, Prest........Hamilton.
Lucian Buttles, Treasurer.....Columbus.
Norton S. Townshend, Rec. Sec'y...Avon.
John H. Klippart, Cor. Sec'y..Columbus.
Alex. Waddle...........South Charleston.
Abel Krum...............Cherry Valley.
Luther Smith.............West Liberty.
T. S. Webb.......................Massillon.
L. Q. Rawson....................Fremont.
James M. Trimble.............Hillsboro.
John Reber......................Lancaster.

Receipts, $9,997 70.

1859—FAIR AT ZANESVILLE.

Norton S. Townsend, President,.....Avon.
*Darwin E. Gardner, Rec. Sec'y ..Toledo.
Lucian Buttles, Treasurer.....Columbus.
Alex. Waddle ....South Charleston.
James M. Trimble ....Hillsboro'.
*Wm. Dewitt.....................Cleveland.
John Reber.......................Lancaster.
John M. Millikin...............Hamilton.
L. Q. Rawson......................Fremont.
C. W. Potwin ....Zanesville.
John H. Klippart, Cor. Sec'y ..Columbus.

Receipts, $8,958.82.

1860—FAIR AT DAYTON.

Alex. Waddle, Pres't...South Charleston.
T. C. Jones, Rec, Sec'y ....Delaware.
C. W. Potwin, Treasurer.......Zanesville.
N. S. Townshend.....................Avon.
*Darwin E. Gardner..............Toledo.
Henry B. Perkins...............Warren.
James M. Trimble ....Hillsboro'.
*Wm. Dewitt....................Cleveland.
John Reber ....Lancaster.
John M. Millikin...............Hamilton.
John H. Klippart, Cor. Sec'y ..Columbus.

Receipts, $11,999.50.

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* Deceased.

1861—FAIR AT DAYTON.

*Darwin E. Gardner, President	Toledo.
*Wm. Dewitt, Rec. Sec'y	Cleveland.
C. W. Potwin, Treasurer	Zanesville.
N. S. Townshend	Avon.
T. C. Jones	Delaware.
Henry B. Perkins	Warren,
James M. Trimble	Hillsboro'.
David Taylor	Columbus.
John Reber	Lancaster.
John M. Millikin	Hamilton.
John H. Klippart, Cor. Sec'y	Columbus.

Receipts, $8,036.18.

1862—FAIR AT CLEVELAND.

T. C. Jones, President	Delaware.
Henry B. Perkins, Rec. Sec'y	Warren.
David Taylor, Treasurer	Columbus.
John M. Millikin	Hamilton.
*Darwin E. Gardner	Toledo.
*Wm. Dewitt	Cleveland.
C. W. Potwin	Zanesville.
N. S. Townshend	Avon.
*Jacob Egbert	Lebanon.
Nelson J. Turney	Circleville.
John H. Klippart, Cor. Sec'y	Columbus.

Receipts, $11,266 64.

1863—FAIR AT CLEVELAND.

Norton S. Townshend, President	Avon.
D. McMillan, Jr., Rec. Sec'y	Xenia.
David Taylor, Treasurer	Columbus.
*Wm. Dewitt	Cleveland.
Henry B. Perkins	Warren.
*Darwin E. Gardner	Toledo.
Thos. C. Jones	Delaware.
Nelson J. Turney	Circleville.
*Jacob Egbert	Lebanon.
W. R. Putnam	Marietta.
John H. Klippart, Cor. Sec'y	Columbus.

Receipts, $11,142.

1864—FIAR AT COLUMBUS.

Nelson J. Turney, President	Circlevile.
W. F. Greer, Rec. Sec'y	Painesville.
David Taylor, Treasurer	Columbns.
Thos. C. Jones	Delaware.
James Fullington	Milford Centre.
Wm. B. McClung	Troy.
*Darwin E. Gardner	Toledo.
*Wm. Dewitt	Cleveland.
Wm. R. Putnam	Marietta.
Daniel McMillan, Jr.	Xenia.
John H. Klippart, Cor. Sec'y	Columbus.

Receipts, $12,620.54.

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* Deceased.

1865—FAIR AT COLUMBUS.

Nelson J. Turney, President	Circleville.	J. W. Ross	Perrysburg.
Wm. F. Greer	Painesville.	R. R. Donnelly	Wooster.
David Taylor, Treasurer	Columbus.	James Buckingham	Zanesville.
Thos. C. Jones	Delaware.	Daniel McMillan, Jr.	Xenia.
James Fullington	Irwin Station.	John H. Klippart, Secretary	Columbus.
Wm. B. McClung	Troy.		

Receipts, $10,658 65.

1866—FAIR AT DAYTON.

Wm. B. McClung, President	Troy.	J. W. Ross	Perrysburg.
Nelson J. Turney	Circleville.	R. R. Donnelly	Wooster.
Wm. F. Greer	Painesville.	James Buckingham	Zanesville.
David Taylor, Treasurer	Columbus.	Daniel McMillan, Jr.	Xenia.
Thos. C. Jones	Delaware.	John H. Klippart, Secretary	Columbus.
James Fullington	Irwin Station.		

Receipts, $14,035 80.

1867—FAIR AT DAYTON.

Daniel McMillan, President	Xenia.	James Fullington	Irwin Station.
James Buckingham, Treas'r	Zanesville.	J. W. Ross	Perrysburg.
Nelson J. Turney	Circleville.	R. R. Donnelly	Wooster.
Wm. F. Greer	Painesville.	Wm. B. McClung	Troy.
Thos. C. Jones	Delaware.	J. Park Alexander	Akron.

SECRETARIES:

John H. Klippart, Corresp'ng..Columbus. Henry S. Babbitt, Recording..Columbus.

Receipts, $18,692 98.

1868—FAIR AT TOLEDO.

James Fullington, Pres't	Irwin Statino.	R. R. Donnelly	Wooster.
James Buckingham, Treas'r	Zanesville.	Wm. B. McClung	Troy.
Daniel McMillan	Xenia.	J. Park Alexander	Akron.
Nelson J. Turney	Circleville.	N. S. Townshend	Avon.
J. W. Ross	Perrysburg.	William Lang	Tiffin.

SECRETARIES:

John H. Klippart, Corresp'ng..Columbus. Henry S. Babbitt, Recording..Columbus.

Receipts, $15,606 25.

1869—FAIR AT TOLEDO.

James Fullington, Pres't	Irwin Station.	D. C. Richmond	Sandusky.
James Buckingham, Treas'r	Zanesville.	Wm. B. McClung	Troy.
Daniel McMillan	Xenia.	J. Park Alexander	Akron.
Nelson J. Turney	Circleville.	N. S. Townshend	Avon.
J. W. Ross	Perrysburg.	William Lang	Tiffin.

SECRETARIES:

John H. Klippart, Corresp'ng	Columbus.	Henry S. Babbitt, Recording	Columbus.

PROCEEDINGS OF THE BOARD.

State Agricultural Rooms,
Columbus, O., March 17, 1868.

Board met, pursuant to adjournment, on the 9th of January last. Full board present.

The premium list was revised, changes being made in the departments and the list increased. The premium list for 1868 was agreed upon, as follows:

ENTRIES AND TERMS.

Any person may enter as many different articles for exhibition as he or she may own, in any of the departments, free of charge.

No Exhibiter's Tickets will be issued.

Each member of the awarding committees will be furnished with a badge, upon reporting to the member in charge of the department in which he is to serve.

Single tickets, twenty-five cents.

No carriages, or persons on horseback, admitted to the grounds.

RULES AND REGULATIONS.

I. Entries *must* specify the exhibiter's name, and the *name* and age of the animal offered.

No animal to be entered in the name of any other than the *bona fide* owner. Should any be entered otherwise, they will not be allowed to receive a premium, although awarded by the Judges.

An animal entered for exhibition in one class cannot compete for a premium in any other, except as follows:

A single animal may be exhibited as one of a pair or herd.

Each horse will have the ring for trial to the satisfaction of the awarding committee.

Exhibiters are required to have their articles entered on the books, at the business office, before they are placed within the enclosure. On the entry of the articles or animals, cards will be furnished, with the number and class, as entered at the office, which are to be placed on the animal or article to be exhibited, and no others will be admitted on the grounds.

Exhibiters must *see to the delivery* of their articles upon the grounds, and to the *Superintendent of the appropriate Department;* and the Society cannot in any case make provision for their transportation, or be subjected to any expense therefor, either in their delivery at or return from the grounds; but all expenses connected therewith must, as heretofore, be provided *by the exhibiter.*

II. Persons intending to exhibit thoroughbred animals in the subdivision of Cattle and Horses, will be required to furnish a pedigree of the animals to be exhibited; the pedigrees to be delivered to the Secretary at the time of making the entry.

III. No premium will be awarded to any aged animal which has received the first premium at former State or *provincial* Exhibitions, either of this or any other State; *provided* always, that all may compete for sweepstakes.

Evidence will be required that animals exhibited as *Breeders* are not barren. Breeding Cows must have produced a living calf within the two years last past.

No person other than the Judges will be permitted to go into the ring where stock is exhibited, except the officers of the Society, or Marshals.

No stock will be permitted to enter the ring unless under halter and in care of a groom.

Horses, Cattle and Sheep will be exhibited in the ring, prepared for the purpose, and the premium ribbons or cards attached by the Judges before leaving the enclosure. *First Premium*—RED. *Second Premium*—BLUE.

No animal or article shall be removed before the close of the exhibition, without the permission of the President of the State Board. Every exhibiter will be required to have his articles on the grounds and arranged in their proper places by Tuesday, and if delayed beyond 12 o'clock M. of that day, *they cannot come in competition for premiums.*

The State Board will take every precaution in their power for the safe preservation of stock and articles on exhibition, *after* their arrival and arrangement upon the grounds, but will not be responsible for any loss or damage that may occur. Exhibiters are desired to give attention to their articles, and at the close of the Fair to attend to their removal.

FORAGE FOR STOCK.—For the convenience of exhibiters, hay and straw will be supplied upon the grounds without charge; provided, that if animals are entered for competition and not exhibited in the ring in the class for which they were entered, they shall be charged at the rate of *One Dollar* per day.

Arrangements have been made with a responsible party to furnish oats and corn on the grounds at market prices, in quantities to suit purchasers.

GENERAL INSTRUCTIONS TO JUDGES.

The Judges are required to report themselves to the member in charge of the Department in which they are to serve on the grounds, where an appropriate insignia will be furnished to them.

No person who is an exhibiter can act as Judge on the class in which he exhibits.

When articles or animals are not deemed worthy of a Premium, the Judges will refuse to award a Premium.

No person will be allowed to interfere with the Judges during their adjudications; and any person who, by letter or otherwise, attempts an interference with the Judges, will be excluded from competition.

The Judges will report the animals entitled to premiums only. Any animals which, in the opinion of the Judges, deserve a special commendation, will be so reported.

Purity of blood, as established by pedigree, symmetry, size, early maturity and general characteristics of the several breeds of animals, to be considered; and the Judges will make proper allowance for age, feeding, and other circumstances. Identity of color is not indispensable to Matched Horses.

If there be any question as to the regularity of any entry, or the right of any animal or article to compete in the class, the Judges shall report the same to the member in charge for adjustment.

The Judges on Fat Cattle will give particular attention to animals submitted for examination. It is believed that, all other things being equal, those are the best cattle that have the greatest weight in the smallest superficies. The Judges will require all the cattle in this class to be weighed, and will take measures to give the superficies of each in their reports. *They will also (before awarding any premiums) require of the competitors full statements as to the manner and cost of feeding.*

REPORTS.

The Judges will be expected to give the *reasons for their decisions*, embracing the valuable and desirable qualities of the animals or articles to which the premiums are awarded. And, as one great object of the Society is to collect valuable information upon subjects connected with agriculture, the several awarding committees are requested to gather all the information possible from exhibiters, in their respective departments, and make their report as full as circumstances will permit.

They will make their reports of awards to the member in charge, as early as possible after making their awards.

A copy of the entry-book will be given to the chairman of the committee, so that he may write out a full report, embracing the reasons upon which the awards were made, which shall be forwarded to the Corresponding Secretary within thirty days from the close of the Fair.

DISCRETIONARY PREMIUMS.

No awarding committees shall award any discretionary premiums. Whenever articles of superior merit are exhibited, for which no premiums have been offered, the awarding committee may enter the same on the book of awards, so that the Secretary may report the same to the Board for further action.

Awarding committees must not attach premium cards to articles for which no premiums are offered.

PAYMENT OF PREMIUMS.

Premiums are payable in cash if desired, except where medals or diplomas are specified. The diplomas and medals will be delivered at the State Agricultural Rooms, in the State House, in Columbus, as soon as they can be prepared or engraved, or will be forwarded as directed, to the proper persons by the Secretary. Premiums will be paid by the Treasurer, only on the order of the President and Secretary, and will be delivered by the Secretary, on application, at any time after the Fair. These orders must be endorsed by the party to whom they are made payable.

All premiums awarded must be claimed prior to the first of January, 1869, or they will be deemed forfeited.

In any case a premium having been awarded upon any single animal or article of $10 or upwards, it shall be optional with the exhibiter to receive either *silver plate* or the money.

STATEMENTS TO BE FURNISHED BY APPLICANTS FOR PREMIUMS ON FARM CROPS.

1. The land shall be measured by some competent person, who shall make affidavit of the accuracy of the measurement, and the quantity of ground.

2. The applicant shall make affidavit according to the forms annexed, to the quantity of grain raised on the ground, entered on the premium list, which affidavit must accompany the application for premiums, together with a sample of the grain.

The main object of the Society being to promote profitable cultivation, they do not propose to offer premiums for crops produced by extravagant expenditure; therefore, a detailed, certified account of the expenses of cultivation must be made. The expense of labor and manure should be particularly stated, and the kind of manure used. The statement must be in the following form :

To —— loads manure, at $—— per load........$——
To —— days plowing, at $—— per day ....$——
To —— " labor, at $—— " ....$——
To —— days harvesting, $—— per day.........$——
To —— " marketing..................................$——

And thus each item of expense incurred in the cultivation and marketing of the various crops, upon which premiums are applied for, must be fully stated.

The kind and condition of the soil; the quantity and kind of seed used; the time and mode of putting it in the ground, should be particularly stated.

Samples of grain and vegetables produced, to be exhibited at the State Fair where practicable, and also to be sent to the rooms of the Board at the January meeting.

3. All the grain grown on the entire piece of land measured, must be either all weighed or measured, *and not the product of a square rod or two weighed, and the remainder guessed at.*

FORMS OF AFFIDAVITS.

—— County, ss.—A. B., being duly sworn, says he accurately measured the land upon which C. D. raised a crop of —— the past season, and the quantity of land is —— acres, and no more.

Sworn to before me, this —— day of ——, 1868.

—— ——, Justice.

—— County, ss.—C. D. being duly sworn, says that he raised a crop of —— the past season, upon the land measured by A. B., and the quantity of grain raised thereon was —— bushels, and no more, weighed (or measured in a sealed half bushel, as the case may be), and that the statements in regard to the manner of cultivation, etc., are correct to the best of his knowledge.

Sworn to before me, this —— day of ——, 1868.

—— ——, Justice.

CLASSIFICATION.

First Department—Live Stock.
Second Department—Machinery, Implements, etc.
Third Department—Mechanics' and Manufacturers' Products.
Fourth Department—Domestic Manufactures and Farm Products.
Fifth Department—Horticultural Products.
Sixth Department—Fine Arts, etc.

During the Fair, these Departments will be under the general charge of the following members of the Board, viz:

Horses	Nelson J. Turney, Circleville.
Cattle	N. S. Townshend, Avon.
Sheep, Hogs and Poultry	D. McMillan, Xenia.
Machinery, Implements, etc	R. R. Donnelly, Wooster.
Mechanics and Manufactures	J. Park Alexander, Akron.
Farm Products	William B. McClung, Troy.
Fruits and Flowers	J. W. Ross, Perrysburg.
Fine Arts	William Lang, Tiffin.

LIST OF PREMIUMS.

FIRST DEPARTMENT—OPEN TO THE WORLD.

HORSES.

NELSON J. TURNEY, ATTENDING MEMBER OF THE BOARD.

THOROUGHBREDS.

[No unsound animal to receive a premium in any class.]

Best stallion, 4 years old and over	$50
2d best “ “	25
Best “ 3 years old and under 4	25
2d best “ “	15
Best “ 2 years old and under 3	20
2d best “ “	10
Best “ 1 year old and under 2	15
2d best “ “	10
Best sucking stallion colt	10
2d best “ “	5
Best mare, 4 years old and over	30
2d best “ “	20
Best “ 3 years old and under 4	20
2d best “ “	15
Best “ 2 years old and under 3	15
2d best “ “	10
Best filly, 1 year old and under 2	10
2d best “ “	5
Best sucking mare colt	10
2d best “ “	5
Best brood mare with foal by her side	30
2d best “ “ “	15

Each horse will have the ring for trial, to the satisfaction of the awarding committee.

ROADSTERS.

TO BE SHOWN IN HARNESS.

Form, size, style, endurance and action, to be considered rather than speed for a short distance.

Best stallion, 4 years old and over	$50
2d best “ “	25
Best “ 3 years old and under 4	25
2d best “ “	15
Best “ 2 years old and under 3	20
2d best “ “	10
Best mare over 4 years old	30
2d best “ “	20

Best mare, 3 years old and under 4	$20
2d best “ “	15
Best “ 2 years old and under 3	15
2d best “ “	10
Best brood mare with foal by her side	30
2d best “ “ “	15

HORSES FOR GENERAL PURPOSES.

Best stallion, 4 years old and over	$50
2d best “ “	25
Best “ 3 years old and under 4	25
2d best “ “	15
Best “ 2 years old and under 3	30
2d best “ “	15
Best “ 1 year old and under 2	15
2d best “ “	10
Best sucking stallion colt	10
2d best “ “	5
Best mare, over 4 years old	30
2d best “ “	20
Best “ 3 years old and under 4	20
2d best “ “	15
Best “ 2 years old and under 3	15
2d best “ “	10
Best filly, 1 year old and under 2	10
2d best “ “	5
Best sucking mare colt	10
2d best “ “	5
Best brood mare with foal by her side	30
2d best “ “ “	15

DRAFT HORSES.

Best stallion, 4 years old and over	$50
2d best “ “	25
Best “ 3 years old and under 4	25
2d best “ “	15
Best “ 2 years old and under 3	15
2d best “ “	10
Best “ 1 year old and under 2	10
2d best “ “	5
Best sucking stallion colt	10
2d best “ “	5
Best mare, over 4 years old	30
2d best “ “	20
Best “ 3 years old and under 4	20
2d best “ “	15
Best “ 2 years old and under 3	15
2d best “ “	10
Best filly, 1 year old and under 2	10
2d best “ “	5
Best sucking mare colt	10
2d best “ “	5

Best brood mare with foal by her side	$30
2d best " " "	15

MATCHED HORSES AND MARES.

Best pair of coach horses	$30
2d best " "	15
Best " farm or draft geldings or mares	30
2d best " " "	15
Best pair of matched roadsters	30
2d best "	15

To be exhibited in harness; a single horse may be exhibited as one of a pair.

GELDINGS AND MARES FOR HARNESS, SADDLES, ETC.

TO BE EXHIBITED IN HARNESS.

Best gelding for light harness	$50
2d best " "	25
Best mare for light harness	50
2d best " "	25

TO BE EXHIBITED UNDER SADDLE.

Best horse or gelding for saddle	$25
2d best " "	10
Best mare for saddle	25
2d best " "	10

TROTTERS.

Best and fastest trotting stallion	$100
Best and fastest trotting mare	100
Best and fastest trotting gelding	50

Open to all horses that have not trotted for money.

SWEEPSTAKES.

SWEEPSTAKES OPEN TO ALL.

Best or fastest trotting horse, mare or gelding	$200

SWEEPSTAKES ON HORSES.

Best stallion of any age or breed	$100
Best mare " "	100

SWEEPSTAKES FOR COLTS.

Best 5 colts, not less than one year old, sired by any one horse, and the sire to be exhibited with his colts; style, size and action to be specifically considered	$50
To the sire of the best 5 colts, as above specified	Silv. Med.

JACKS AND MULES.

Best jack, 3 years old and over	$40
2d best " "	20

Best jack, 2 years old and under 3	$25
2d best " "	10
Best jennet, 3 years old and over	15
2d best " "	10
Best " 2 years old and under 3	10
2d best " "	5
Best " 1 year old and under 2	5
2d best " "	3
Best pair of mules, 3 years old and over	25
Best mule, 2 years old and over	15
Best mule colt	10

CATTLE.

N. S. TOWNSHEND, ATTENDING MEMBER OF THE BOARD.

SHORTHORNS.

Best bull, 3 years old and upwards	$75
2d best bull, " "	50
Best bull, 2 years old and under 3	40
2d best bull, " "	25
Best bull, 1 year old and under 2	30
2d best bull, " "	20
Best bull calf	15
2d best "	10
Best cow, 4 years old	50
2d best cow, 4 years old	30
Best cow, 3 years old and under 4	50
2d best cow, " "	30
Best cow, 2 years old and under 3	30
2d best cow, " "	20
Best heifer, 1 year old and under 2	25
2d best heifer, " "	15
Best heifer calf	15
2d best "	10
Best breeding cow, with calf at foot	50
2d best " "	30

WORK OXEN AND STEERS.

Best yoke of oxen, 4 years old and upwards	$40
2d best " " "	20
Best yoke of steers, 3 years old and under 4	30
2d best " " "	15
Best yoke of steers, 2 years old and under 3	20
2d best " " "	10
Best yearling yoke of oxen	10
2d best " "	5

FAT CATTLE.

Best single bullock, 4 years old and upwards	$40
2d best " " "	30

Best steer, 3 years old and under 4	$20
2d best " " "	10
Best steer, 2 years old and under 3	20
2d best " " "	10
Best cow or heifer	25
2d best "	15

Statement of manner of feeding to be handed to the Secretary at the time of entry.

DAIRY STOCK.

Best milking cow, 4 years old and over	$40
2d best " " "	20
Best milking cow, 3 years old and under 4	30
2d best " " "	15
Best heifer, 2 years old	20
2d best " "	10
Best dairy bull, 3 years old and over	30
2d best " " "	20
Best dairy bull, 2 years old and under 3	25
2d best " " "	15

Dairy stock will be shown in dairying condition. Fat animals cannot compete as dairy stock.

SWEEPSTAKES ON CATTLE.

Best herd of one bull and four cows, or heifers, all to be of one breed, and owned by exhibiter, a premium of	$200
2d best herd of one bull and four cows, all to be of one breed and owned by exhibiter, a premium of	100
Best breeding bull, to be exhibited with five of his calves not less than six months old, and the bull, as to constitution, health and vigor, to exhibit good breeding condition	100
Best bull of any age or class	100
Best cow	50
Best herd of one bull and three cows, or heifers, all to be of one breed, and owned and bred by the exhibiter	GOLD MED.

SHEEP.

D. McMILLAN, ATTENDING MEMBER OF THE BOARD.

MERINOS.

Best ram, 2 years old and over	$30
2d best ram, " "	15
Best ram under 2 years old	25
2d best ram " "	15
Best pen of 3 ewes, 2 years old and over	30
2d best " " "	15
Best pen of 3 ewes under 2 years old	30
2d best " " "	15
Best ram lamb	10
2d best "	5
Best pen of 3 ewe lambs	15
2d best " "	8

LONG-WOOL SHEEP—LEICESTERS.

Best ram, 2 years old and over	$30
2d best ram, “ “	15
Best ram under 2 years old	25
2d best ram “ “	15
Best pen of 3 ewes over 2 years old	30
2d best “ “ “	15
Best pen of 3 ewes under 2 years old	30
2d best “ “ “	15
Best ram lamb	10
2d best “	5
Best pen of 3 ewe lambs	15
2d best “ “	8

LONG-WOOL SHEEP—NOT LEICESTERS.

Best ram, 2 years old and over	$30
2d best ram, “ “	15
Best ram under 2 years old	25
2d best ram “ “	15
Best pen of 3 ewes over 2 years old	30
2d best “ “ “	15
Best pen of ewes under 2 years old	30
2d best “ “ “	15
Best ram lamb	10
2d best “	5
Best pen of 3 ewe lambs	15
2d best “ “	8

SOUTHDOWN SHEEP.

Best ram, 2 years old and over	$30
2d best ram, “ “	15
Best ram under 2 years old	25
2d best “ “	15
Best pen of 3 ewes, 3 years old and over	30
2d best “ “ “	15
Best pen of 3 ewes under 2 years old	30
2d best “ “ “	15
Best ram lamb	10
2d best “	5
Best pen of 3 ewe lambs	15
2d best “ “	8

FAT SHEEP.

Best pen of 3 fat sheep	$15
2d best “ “	10
Best single fat sheep	5
Best 3 fat lambs	10

SWEEPSTAKES ON FINE-WOOL SHEEP.

Best ram of any age	$50
Best ewe of any age	25
Best pen of not less than 5 ewes, of any age	50

The quality and quantity of wool, the perfection of form and size, to be especially considered.

SWEEPSTAKES ON LONG-WOOL SHEEP.

Best ram of any age	$50
Best ewe	25
Best pen of not less than 5 ewes, of any age	50

SWINE.

D. McMillan, Attending Member of the Board.

LARGE BREEDS.

Best boar over 2 years old	$25
2d best “ “	15
Best boar over 1 year old and under 2	20
2d best “ “ “	15
Best boar under 1 year old	15
2d best “ “	10
Best sow over 2 years old	20
2d best “ “	10
Best sow under 2 years old	25
2d best “ “	15
Best sow, with litter of not less than 5 pigs	25
2d best “ “ “	15
Best litter of not less than 5 pigs over six months old	20
2d best “ “ “ “	15

SMALL BREEDS.

Best boar over 2 years old	$25
2d best “ “	15
Best boar over 1 and under 2	20
2d best “ “	15
Best boar under 1 year old	15
2d best “ “	5
Best sow over 2 years old	20
2d best “ “	10
Best sow under 2 years old	20
2d best “ “	15
Best sow, with litter of not less than 5 sucking pigs	25
2d best “ “ “ “	15
Best sow, with litter of not less than 5 pigs over six months old	20
2d best “ “ “ “ “	15

SWEEPSTAKES.

Best boar of any age or breed	$25
Best sow of any age or breed	25

POULTRY.

Best pair of China fowls	$5
2d best “ “	3
Best pair of Game fowls	5
2d best “ “	3

Best pair of Dorkings	**$5**
2d best " "	**3**
Best pair of Polands	**5**
2d best " "	**3**
Best pair of Spanish	**5**
2d best " "	**3**
Best pair of Hamburg fowls	**5**
2d best " " "	**3**
Best pair of Bolton Greys	**5**
2d best " " "	**3**
Best pair of Domeniques	**5**
2d best " "	**3**
Best pair of Bantams	**2**
2d best " "	**1**
Best pair of Peafowls	**5**
2d best " "	**3**
Best pair of Pheasants	**5**
2d best " "	**3**
Best pair of Cayuga Black Ducks	**5**
2d best " " " "	**3**
Best pair of White Aylesbury	**5**
2d best " " "	**3**
Best pair of Rouen	**5**
2d best " "	**3**
Best pair of common ducks	**5**
2d best " " "	**3**
Best pair of turkeys	**5**
2d best " "	**3**
Best pair of geese	**5**
2d best " "	**3**
Best pair of Bremen geese	**5**
2d best " " "	**3**
Best pair of Gray Chinese geese	**5**
2d best " " " "	**3**
Best pair of Toulouse geese	**5**
2d best " " "	**3**
Best pair of Poland geese	**5**
2d best " " "	**3**
Best pair of wild geese	**5**
2d best " "	**3**
Largest exhibition of Pigeons, not less than six varieties	**5**
Best and largest exhibition of Poultry, owned by one exhibiter	**10**

SECOND DEPARTMENT.

R. R. DONNELLY, ATTENDING MEMBER OF THE BOARD.

☞ Models cannot compete with full sized machines.

☞ All machinery, as far as practicable, to be exhibited in motion.

MACHINERY, ENGINES, ETC., ETC.

Best stationary engine	**$50**
2d best " "	**25**

Best portable steam engine	$50
2d best “ “ “	25
Best steam guage	3
“ “ rotary pump	5
“ preventive steam boiler explosion	5
“ portable saw mill	20
2d best “ “	10
Best saw gummer	2
“ tire upsetter	5
“ self-setting saw mill head blocks	5

SHOP MACHINERY.

Best hub boring machine	$5
“ fence cap “	3
“ stave “	5
“ shingle “	5
“ hoop “	5
“ moulding “	5
“ morticing “	5
“ sash “	5
“ tenoning “	5
“ scroll sawing “	5
“ wood planing “	10
“ iron “ “	10
“ flour packing “	3
“ iron turning lathe	5
“ wood “ “	5
“ water wheel	5
“ anti-friction journal-box	3
“ saw hanging	5
“ key seat cutter	5

AGRICULTURAL MACHINES.

FIRST DIVISION.

Best threshing machine	$30
2d best “ “	15
Best threshing machine operated by endless chain horse power	10
“ hemp and flax dressing machine	10
“ flax scutching machine	10
“ clover huller	10
“ “ “ and cleaner	10
“ cider mill and press	10
“ hay press	10
“ corn sheller, (power)	10
“ “ “ (hand)	10
“ smut machine	10
“ farm feed mill	10
“ fanning “	10
“ platform scales	10
“ display of platform scales	10
“ stock scales for general purposes, to be set up by exhibiter, and be used by the Board, during the Fair free of charge	15

SORGHO AND MACHINERY.

Best 10 lbs. sorgho sugar*	$20
2d best 10 lbs, sorgho sugar	5
Best gallon sorgho syrup	10
2d best " "	5
Best corn and cane harvester	5
" sorgho stripper and cutter	3
" sorgho mill	10
2d best "	7
Best sorgho evaporator	20
2d best " "	10

The Board desires to afford such facilities for the exhibition of sorgho machinery, as will make the department a feature of interest to all parties concerned.

Persons desiring to exhibit will be assigned a convenient position for the purpose of erecting such structures for the display of their apparatus as they may choose.

All machinery in this class must be exhibited in operation. Evaporators must have produced upon the grounds, under the supervision of the committee, not less than one-half barrel of syrup.

SEEDING AND HARVESTING MACHINES.

Best wheat drill (2 horse)	$20
2d best " "	10
Best wheat drill (1 horse)	5
" garden seed drill	3
" grass broadcast sowing machine	5
" corn planter (horse power)	10
" " (hand)	2
" potato planter	5
" potato digger	5
" corn cultivator (two horse)	5
" " (one horse)	3
" corn shocking and cutting machine	5
" horse hoe	10
" horse hay rake (wheel)	5
" " " (revolving)	5
" horse hay fork	5
" horse hay fork and stacker combined	5
" hay gatherer for stacking	5

REAPERS AND MOWERS.

Best reaping machine	$10
" " self-raker	10
" mowing machine	10
" combined reaping and mowing machine	10
" clover seed harvester	10
" grain binder	5

☛*Statement of process of manufacture, with affidavit to be furnished, stating how and by whom it was manufactured.

AGRICULTURAL MACHINES.

SECOND DIVISION.

Best horse power (sweep)	$10
" " (endless chain)	10
" circular saw mill operated by horse power	5
" log X cut saw mill (horse power)	10
" " " (hand power)	5
" grubbing machine	5
" stump extractor, to be tested on the ground	25
" brick machine	10
" ditching machine	10
" mole or blind ditching machine	10
" drain tile machine, with specimens of tile	20
" roofing tile machine, with specimens of manufacture	20
" willow peeling machine	3
" self-regulating wind mill	5

PLOWS AND PLOWING MATCH.

The plows to be tested by an actual trial with a dynamometer, the Board finding ground in which to make the trial, under the following

RULES:

I. The plows to be held by the competitors, or persons appointed by them.

II. Each plow shall open and plow four rounds, back furrowing; the last furrow to be not less than seven inches deep and thirteen wide.

III. In testing the draft, the same plowman shall hold the plow who did the trial plowing—the second furrow to be the test, which shall be of the size above indicated.

The following points will be considered by the committee in determining the merit of the plows:

I. Gross draught.
II. Weight of plow.
III. Loss of power in overcoming friction.
IV. Net power required to cut and turn furrow slice.
V. Width of furrow slice.
VI. Depth of furrow slice.
VII. Comparative draught.
VIII. Simplicity of structure, materials, workmanship, durability, and price.

Best plow for general purposes	$10
" stubble plow	10
" sod plow	10
" steel plow	10
" cast iron plow	10
" double plow	10
" subsoil plow	5
" side-hill plow	5
" one-horse plow	3
" double shovel plow	2
" dynamometer	3

Best steam plow, to be tested to the satisfaction of the committee, and its utility fully demonstrated	$50
" display and greatest variety of plows	20

PLOWING MATCH.

[Plowing to take place Wednesday forenoon.]

Best plowing	$50
2d best plowing	25

Each plowman will find his own team.

Plowing will be done by two horses, the plowman to drive.

TOOLS AND IMPLEMENTS.

Best display of haying and harvesting tools	$10
" set of draining tools	5
" farm road scraper	2
" field roller and crusher	5
" harrow	3
" hay and straw cutter	5
" church bell	3
" farm bell	2
" chime of bells	5
" agricultural boiler	3

IMPLEMENTS AND FIXTURES.

Best ornamental fence	$10
" portable fence	3
" iron fence, including posts	3
" farm gate	3
" fruit ladder	3
" fruit and step ladder	3
" extension ladder	3
" sheep rack	3
" sheep chair	3
" dry house	5
" cheese press	3
" cheese vat with heater attached	5
" cheese shelf model	3
" dog power	3

HOUSEHOLD IMPLEMENTS.

Best dozen corn brooms	$2
" churn	5
" butter worker	5
" cabbage cutter	2
" sausage meat cutter and stuffer	1
" washing machine	3
" clothes wringer	2
" mangle or ironing machine	2
" clothes horse to occupy least space	2

Best half dozen washboards	$1
" well pump	3
" apparatus for raising water	2
" water filter	3
" hand power loom	20
2d best " "	10
Best apparatus for preserving salt meats	5
" grindstone	2
" bee-hive (without bees)	3
" refrigerator	2

THIRD DEPARTMENT.

MECHANICS' AND MANUFACTURERS' PRODUCTS.

J. PARK ALEXANDER, ATTENDING MEMBER OF THE BOARD.

WORKED METALS.

Best display of copper work	$5
" brass work	5
" axes	3
" locks	5
" door trimmings	3
" window trimmings	3
" window blind or shutter trimmings	3
" saddlers' hardware	10
" horse shoes	2
" horse shoe nails	1
" plumbers' goods and ware	5
" gas chandeliers and gas burners	5
" lamps	3
" general hardware	10
" iron and steel	5
" reaping and mowing machine knives	5
" sash fastener	2
" coopers' tools	5
" mechanics' tools other than coopers'	5
" table cutlery	3
" pocket cutlery	3
" silver ware	5
" Brittania ware	3
" clocks	3
Best eave trough fastener	3
Best display of kitchen utensils of brass or copper	5
" kitchen utensils of tin	3
" circular saws	Silver Medal.
" mill saws	"

Best display of hand saws	Silver Medal.
" files	"

The last four articles, as well as all those in the entire remainder of this department, to be of Ohio manufacture.

VEHICLES.

Best two-horse family carriage	$30
2d best " " "	15
Best one-horse " "	10
" top-buggy	10
" trotting wagon	5
" farm wagon for general purposes	5
" farm wagon	10
" spring market wagon	5
" cart	5
" street goods wagon	5
" wagon or carriage break	2
" jack screw	1
" sleigh	5
" carriage or cab for children	5
" display of carriage wheels, hubs, etc	10
" open buggy, finished, to be exhibited without oil or paint	10

WOODEN WARE.

Best display of cedar ware	$3
" pine ware	3
" oak ware	3
" window shades	2
" window blinds	3
" willow ware	3
" split wood baskets	2
" pine, oak or walnut doors	3
" flour, pork and tight barrels	3
" grain measures	2
" butter firkins	2
" worked flooring	2
" turning lathe work	3
" osier willow	2

CHEMICALS.

Best ivory black	$2
" Prussian blue	2
" copal varnish	2
" glue	2
" prussiate of potash	2
" linseed oil	2
" white lead	2
" display of soap	2
" display of candles	2
" specimen of lard oil	2
" display of potash, saleratus, pearlash and other alkalies	2
" display of writing fluid	5

Best display of blacking	2
" display of lubricating petroleum	5
" display of illuminating, non-explosive mineral oil	25

All the chemicals are to be of American manufacture.

STOVES, CASTINGS, ETC.

Best cooking stove for wood	$10
" cooking stove for coal	10
" parlor stove	10
" warming furnace or other apparatus	10
" cooking range	10
" parlor grate	5

CABINET WARE.

Best dressing bureau	$10
" sofa	10
" lounge	2
" extension table	3
" office chair	2
" set of parlor chairs	5
" centre table	5
" pair of side tables	3
" set of parlor furniture	20
" display of furniture	20
" display of mattresses	5
" seats and desks for schools	3
" writing desk	2
" book case	3
" wardrobe	3
" sick chair or couch	3

GLASS, CROCKERY, STONEWARE, BRICKS AND TILES—AMERICAN MANUFACTURE.

Best specimen Rockingham ware	$10
" stone-ware	10
" specimen ground glass	Diploma.
" specimen stained glass	do
" water pipe of water lime	do
" looking-glass	do
" plate glass	do
" window-glass	do
" flint glass	do
" bottle glass	do
" bottles, green glass	do
" vials.	do
" tincture and other stoppered bottles and vials	do
" retorts and receivers, tubulated and plain	do
" demijohns	do
" carboys	do
" terra-cotta	do
" fire-bricks	do

Best pressed brick	Diploma.
" pottery, various kinds	do
" display of stone-ware	do
" display of glass-ware	do
" display of queensware	do
" display of dressed stone	do
" mill stone	do
" marble of Ohio	do
" barrel coarse salt	do
" barrel common salt	do
" sack table salt	do
" barrel lime	do
" hydraulic cement	do

FOURTH DEPARTMENT.

FARM PRODUCTS AND DOMESTIC MANUFACTURES.

William B. McClung, Attending Member of the Board.

Farm Products, Food, Condiments, etc.

FIELD CROPS—OHIO.

To be awarded at the annual meeting of the State Board, at Columbus, in January next.

Specimens and detailed statements of the experiments to be presented for the Board at the January meetings.

Best crop of wheat, not less than five acres, nor less than 30 bushels per acre	$50
Best crop of Indian corn, not less than five acres, to be weighed between the 15th of November and the 1st of December, not less than 75 bushels per acre	50
Best crop of barley, not less than five acres, nor less than 40 bushels per acre	30
Best crop of rye, not less than five acres, nor less than 30 bushels per acre	20
Best crop of oats, not less than five acres, nor more than 40 bushels per acre	20
Best crop of buckwheat, not less than one acre, nor less than 30 bushels per acre	10
Best crop of beans, not less than one acre, nor less than 25 bushels per acre	10
Best crop of potatoes, of good table quality, not less than half an acre, nor less than 150 bushels per acre	25
Best crop of sweet potatoes, not less than one-fourth of an acre	15
Best crop of onions, not less than one-fourth of an acre	10
Best half acre sorgho made into syrup*	40
2d best " " "	10
Best acre of broom-corn	10
Best five acres of flax-seed, not less than 12 bushels per acre	20

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* The culture of the plant and process of manufacture, and quantity of syrup produced, to be stated in writing, sworn to by the manufacturer, and filed with the Secretary.

Best two acres of timothy hay	$10
Best acre of clover seed	10
Best acre of timothy seed	10
Best acre of orchard grass seed	10

ESSAYS.

A premium of $100 will be paid for the best accepted report of the agriculture of either, or each of the following counties: Belmont, Defiance, Erie, Greene and Lawrence. The report to embrace, in plain and popular form, a general description of the soil and its cultivation; the crops produced; the extent to which sub-soiling, or plowing with the Michigan double plow, and underdraining have been conducted and the results; how barn-yard manure and other fertilizers have been applied and the results; a description of farm stock—cattle, horses, sheep and hogs; the breeds that have been resorted to for their improvement and the results, with an estimate of the proportion of each class which yet remains unimproved, and the effect of the improvement upon the value of the stock, &c.; the system adopted in the management of grass lands—the production of hay, grazing, &c. Also,

A premium of $25 will be paid for the best accepted report of actual experiments made, in any part of the State, in underdraining; describing the character of the soil and the mode of cultivation; depth of drains; what distance apart; the description of tile or other materials used; the expense per rod or per acre, and the effect produced upon the condition of the soil and character and amount of products.

The reports to be sent to the Secretary's office in Columbus, before the 1st of January, 1869, at which time the awards will be made by a committee of the Board.

FLOUR AND GRAIN.

Best barrel white wheat flour (Ohio manufacture and Ohio wheat)	Dip. and	$5
2d best " " " "		3
Best barrel red wheat flour	Dip. and	5
2d best " "		3

To be exhibited by the manufacturer, with a statement of the variety and quantity of wheat necessary to make it.

Best two bushels white winter wheat	$10
2d best " " "	5
Best two bushels amber winter wheat	10
2d best " " "	5
Best two bushels red winter wheat	10
2d best " " "	5
Best sample spring wheat, not less than half a bushel	5
2d best " " " " "	3

The *premium wheat* to be left in charge of the Superintendent of this Department, and to become the property of the State Board of Agriculture.

Best sample of rye, not less than half a bushel	$5
" oats, " "	5
" barley, " "	5
" buckwheat," "	5
" flax seed, " "	5
" hops, not less than five pounds	5
" timothy, not less than half a bushel	5

Best sample of clover seed, not less than half a bush	$5
“ blue grass seed “ “	5
“ red top seed, “ “	5
“ orchard grass seed, not less than half a bushel	5
Best half bushel yellow corn	3
2d best “ “	2
Best half bushel white corn	3
2d best “ “	2
Best half bushel early corn	3
2d best “ “	2

☞Evidence must be presented showing that grain, vegetables and products have been grown by the exhibiter.

BUTTER, BREAD, Etc

Best lot, ten lbs., butter in rolls	$10
2d best “ “	5
Best lot, ten lbs., whey butter	10
2d best “ “	5
Best lot, not less than 25 lbs., made in May or June	10
2d best “ “ “ “	5
Best tub or firkin, not less than 50 lbs., made at any time	20
2d best “ “ “ “	10
Best five cans condensed milk (process of manufacture to be stated)	10
2d best “ “ “ “	5

Competitors must state, in writing, the time when it was made; the number of cows, and whether any other food than grass was given them; the treatment of the milk before churning; mode of churning and freeing the butter from the milk; the quantity and kind of salt used, and whether saltpetre, sugar, or any other substance has been employed.

BREAD AND CEREAL FOOD.

Best 3 loaves of domestic white bread	$10
“ 4 loaves of baker's bread, not less than 48 hours old	3
“ pilot bread	2
“ biscuit	2
“ soda biscuit	2
“ crackers, (butter)	2
“ “ (sweet)	2
“ “ (Boston	2
“ domestic corn bread	3
“ “ rye bread	3
“ “ brown bread	5

In preparing bread, no saleratus or other alkalies or acids to be used.

Best 3 hams, mode of preserving to be stated in writing, one of the hams to be cooked	$10
Best 6 beef tongues	3
Best 6 pieces dried beef, not less than 8 lbs. in a piece	3

HONEY, PRESERVES, PICKLES, Etc.

Best 10 lbs. honey	$5
2d best 10 lbs. honey	3

The honey to be taken without destroying the bees, and kind of hives to be specified as well as the general management of the bees during the year.

Best canned tomatoes	$3
“ “ blackberries	3
“ “ raspberries	3
“ “ peaches	3
“ “ pears	3
“ “ apples	3
“ “ quinces	3
“ “ cherries	3
“ “ gooseberries	3
“ “ currants	3
“ “ grapes	3
Largest and best variety of canned fruits	10
“ “ pickles	10
“ “ jellies	10
“ “ preserves	10
Best apple jelly	3
“ currant jelly	3
“ peach jelly	3
“ quince jelly	3
“ preserved quinces	3
“ “ peaches	3
“ “ pears	3
“ “ apples	3
“ “ plums	3
“ tomato catsup	3
“ cucumber catsup	3
“ pickled cucumbers	3
“ “ peaches	3
“ “ tomatoes	3
“ “ walnuts	3
“ “ butternuts	3
“ “ mangoes and melons	3
“ “ onions	3
“ “ gherkins	3
“ specimen of portable soups	3
“ “ concentrated vegetables	3
“ gallon maple syrup	5
“ 10 lbs. maple sugar	5

POTATOES.

Best half bushel Neshannock potatoes	$5
“ “ white peach blow “	5
“ “ Jersey “ “	5
“ “ Prince Albert “	5
“ “ Buckeye “	5
“ “ Garnet Chili “	5
“ “ Early Goodrich “	5
“ “ Early Harrison “	5
“ and earliest potato, (sworn statement to be furnished, stating time when they were ready for use at wholesale)	10

Best	half bushel of any other variety	$3
"	ten varieties of Irish potatoes, half peck of each variety	10
"	half bushel sweet potatoes	5

VEGETABLES.

Best	6 parsnips	$2
"	6 carrots	2
"	3 long blood beets	2
"	6 turnip beets	2
"	6 sugar beets	2
"	display of beets in variety and quality	5
"	peck of tomatoes	5
"	display of tomatoes in variety and quality	5
"	3 drumhead cabbages	3
"	3 heads of red Dutch cabbage	2
"	3 heads of any other variety	3
"	3 heads of cauliflower	2
"	half peck of red onions	2
"	" yellow onions	2
"	" white onions	2
"	display of onions in variety and quality	5
"	half peck of peppers for pickling	2
"	display of peppers in variety and quality	5
"	12 roots of salsify	2
"	6 stalks of celery	3
"	marrow squashes	3
"	Hubbard squashes	3
"	3 winter crook-neck squashes	3
"	California squash	3
"	display of squashes in variety and quality	5
"	display of pumpkins in variety and quality	5
"	dozen of sweet corn, green	3
"	display of sweet corn, in variety and quality, green or dry	5
"	3 mountain sweet watermelons	3
"	3 watermelons of any other variety	3
"	3 green-fleshed muskmelons	3
"	3 yellow fleshed "	2
"	and greatest display of melons of all varieties, both watermelons and muskmelons	5
"	6 cucumbers	1
"	half peck of Lima beans in pod	2
"	" white beans, dry	2
"	" kidney bush beans, in pod	2
"	" field peas, dry	1
"	" garden peas, dry	2
"	and greatest variety of peas, dry	3
"	half peck gherkin cucumbers	2
"	3 purple egg plants	2
"	and greatest variety of vegetables raised by one exhibiter	25

GRASSES AND GRASS-SEEDS.

Best display of meadow or pasture grass-seeds, to include at least 20 varieties including clovers	$25

2d best display of meadow or pasture grass seeds, to include at least 20 varieties including clovers	$15
Best display of meadow or pasture grasses growing in pots, to include at least 10 varieties exclusive of clovers	25
2d best display of meadow or pasture grasses growing in pots, to include at least 10 varieties exclusive of clovers	15

CHEESE.

DOMESTIC MANUFACTURE.

Best cheese, 1 year old and over	$10
2d best " " "	5
Best and largest lot	20
2d best " "	10
Best cheese, under 1 year old	10
2d best " "	5

FACTORY MADE.

Best cheese, 1 year old and over	10
2d best " " "	5
Best and largest lot	20
2d best " "	10
Best cheese, under 1 year old	10
2d best " "	5

SWEEPSTAKES ON CHEESE.

For the best and largest display of cheese.............................Silver Medal.

Competitors in Entry Book 48, 49 and 50, must state, in writing, the time it was made; the number of cows kept; whether the cheese was made from one, two or more milkings; whether any addition was made of cream; the method of preserving and preparing rennet; the mode and amount of pressure, and the treatment of the cheese afterward; and shall answer the following questions:

1st. What do you consider the best breed of cows for dairy purposes?

2d. What variety of grasses produce the best pasturage for making cheese?

3d. Does long continued grazing for dairy purposes exhaust or improve your land for dairying?

4th. At what price per acre can land be profitably used for dairy purposes in Ohio?

5th. What is a proper temperature of a room for curing cheese, and what effect does a higher or lower temperature produce upon the flavor and other qualities of the cheese?

6th. State in DETAIL, your process of making and curing cheese, including the preserving and preparing rennet for use, etc.

No premium to be awarded unless all the rules are fully complied with, and all the questions properly answered.

SADDLERS' AND SHOEMAKERS' WARE AND MISCELLANEOUS ARTICLES.

Best traveling trunk	$5
" carpet sack	2
" set of carriage harness	5
' set of farm harness	5

Best display of leather	$5
“ “ saddles and bridles	5
“ “ hames	3
“ “ saddletrees	3
“ “ brushes	3
“ “ shoe lasts, pegs and lasting machine	3
“ pair of dress boots	2
“ “ heavy boots	2
“ “ gents' dress shoes	2
“ “ congress gaiters	2
“ “ ladies' gaiters	1
“ “ “ slippers	1
“ “ bootees	1
“ display of bound account books	5
“ “ paper	5
“ “ paper hangings and borders	3
“ silk hat	2
“ soft hat	2
“ fur cap	2
“ made suit of gentleman's clothing	5
“ display of printing	5
“ “ buck gloves and mittens	3
“ “ ladies' furs	3
“ fur gloves and mittens	3
“ fur robe	5

TEXTILE FABRICS, AND MATERIALS OF WHICH THEY ARE MADE.

Articles to be exhibited by manufacturer, and articles which heretofore have received a premium to be excluded from competition.

HOUSEHOLD FABRICS—BEING GOODS MADE IN FAMILY.

Best 10 yards jeans	$10
2d best “	5
Best pair woolen blankets	5
2d best “ “	3
Best 10 yards flannel	10
2d best “	5
Best woolen carpet, 15 yards	5
2d best “ “	3
Best 10 yards linen	5
2d best “	3
Best 10 yards linen diaper	5
2d best “ “	3
Best 10 yards kersey	5
2d best	3
Best pair kersey blankets	5
2d best “	3
Best rag carpet, 15 yards	10
2d best “ “	5
Best 15 yards tow cloth	5
2d best “ “	

Best hearth rug	$5
2d best “	2
Best double carpet coverlet	5
2d best “ “	3
Best pair woolen knit stockings	2
2d best “ “	1
Best pair cotton knit socks	2
2d best “ “	1
Best pair woolen knit socks	2
2d best “ “	1
Best pair linen knit socks	2
2d best “ “	1
Best pair cotton knit stockings	2
2d best “ “	1
Best pair by Misses under 12 years of age	2
2d best “ “ “	1
Best pound linen sewing thread	2
2d best “ “	1
Best pair woolen fringe mittens	2
2d best “ “	1
Best pair woolen mittens	2
2d best “ “	1
Best pair by Misses under 12 years of age	2
2d best “ “ “	1
Best pair of woolen stockings by Misses under 12 years of age	2
2d best “ “ “	1
Best linen handkerchiefs	2
“ netting	2
“ worsted knit stockings	2
“ stocking yarn	2
“ woolen shawl	2
“ mill bag	2
“ woolen knit drawers	2
“ woolen knit shirt	2
“ foot mats	2
“ straw hat	3
“ palm leaf hat	3
“ straw bonnet	3
“ palm leaf bonnet	3
“ grass bonnet	3
“ grass hat	3
“ gentlemen's shirts	2
“ knit bed spread	2
“ wove bed spread	2
“ 10 pounds dressed flax	5
“ pound of reeled silk	5
“ 5 pounds flax yarn	5

No article manufactured in factories, or out of the family, will be received in this class. Exhibiters must accompany their articles with a certificate of manufacture in the family and within the year.

NEEDLE WORK, EMBROIDERY, ETC.

Best ottoman cover	$3
“ table cover	2
“ fancy chair work, with needle	3
“ fancy chair cushion and back	3
“ woolen shawl	3
“ crochet shawl	2
“ worked shawl	3
“ lace cape	3
“ lamp stand mat	2
“ ornamental needle work	3
“ silk embroidery	3
“ embroidered sofa cushions	2
“ “ mantilla	3
“ “ table spread	2
“ “ dressing gown	3
“ “ lady's robe	3
“ “ lady's dress	3
“ “ children's clothes	3
“ under sleeves	2
“ “ lady's collar	2
“ handkerchief	2
“ chenille embroidery	3
“ embroidery with beads	3
“ tetting collar	3
“ worked collar	2
“ worked veil	3
“ worked hankerchief	2
“ silk bonnet	3
“ velvet bonnet	3
“ best straw bonnet	2
“ knit cloak	3
“ variety of linen embroidery	3
“ group of artificial flowers	3
“ variety of artificial flowers	3
“ specimen of wax flowers	2
“ group of wax flowers	3
“ specimen of wax fruit	2
“ and largest variety of wax fruit	3
“ specimen of moss or lichen work	3
“ “ cone work	3
“ “ leaf work	3
“ “ flower work	3
‘ “ shell work	3
“ braid of straw or grass	3
“ specimen of braid work	2
“ embroidered picture	3
“ white quilt	3
“ worked quilt	3

Best silk quilt	$3
" patchwork quilt	3
" children's afghan	2

SILK AND MILL FABRICS.

Best specimen of silk manufactured, not less than five yards	$10
" pound of reeled silk, made in family	5
" specimen of raw silk goods	5
" pair of silk stockings	3
" pair of silk gloves	3
" silk shawl	5
" silk cravat	3
" piece of pocket hankerchief	3
" 10 yards woolen cloth	10
" 10 " cassimere	10
" 10 " satinet	10
" 10 " jeans	20
" 10 " of floor oil cloth	10
" 10 " tweed	5
" 10 " cloth of flax cotton	10
" 10 " flannel	5
" 15 " woolen carpet	10
" 15 " tow cloth	5
" 10 " linen	5
" 10 " linen diaper	5
" 10 " kersey	10
" hearth rug	3
" double carpet coverlet	5
" pair of cotton wove stockings	1
" " linen "	1
" " woolen "	1
" " cotton wove socks	1
" " linen "	1
" " woolen "	1
" pound linen sewing thread	1
" woolen shawl	5
" pair woolen blankets	10
" three pounds stocking yarn	3
" oil-cloth table cover	1
" display of cordage	5
" bale of flax moss for upholsterers	3
" " " mattress	5
" " rope stock for rope spinners	3
" " fine tow for bagging or awning	5
" specimen of flax prepared for spinning by machinery	10
" display of flax or tow bagging	5
" and largest display of flax goods manufactured in Ohio	25

SEWING AND KNITTING MACHINES.

Best knitting machine	$10
" sewing machine for manufacturing purposes	10
" sewing machine for family use	10
" sewing machine for family use, cost not to exceed $50	10

FIFTH DEPARTMENT—HORTICULTURAL PRODUCTS.

JAMES W. ROSS, ATTENDING MEMBER OF THE BOARD.

FLOWERS.

Best floral ornament	$5
2d best “	3
Best and most beautifully arranged basket of flowers for table	3
2d best and most beautifully arranged basket of flowers for table	2

Plants entered for competition for special premiums, will not be allowed to compete for premiums in collections. The committee will make no award unless the object is really meritorious.

PROFESSIONAL LIST.

It is understood that nurserymen and commercial gardeners only compete in this class.

STOVE AND GREEN HOUSE PLANTS.

Best collection of not less than 20 varieties, variety and growth being taken into consideration	$15
2d best collection of not less than 20 varieties, variety and growth being taken into consideration	10
Best collection of 12 varieties, variety and growth being taken into consideration.	8
2d best collection of 12 varieties, variety and growth being taken into consideration,	5
Best specimen plant in or out of bloom	3
“ collection of not less than 10 varieties of variegated leaved plants	5
2d best “ “ “ “ “ “ “	3
Best single specimen	1
“ collection of aloes and cactus in pots	2
“ “ fuchsias in pots, growth and variety considered	3
2d best “ “ “ “ “ “	2
Best “ geraniums in bloom	3
2d best “ “ “	2
Best “ gloxinias and achimenes	2
“ “ ferns and lycopodiums	3
2d best “ “ “	2
Best and largest collection of verbenas, grown in pots, growth and bloom particularly considered	5
2d best and largest collection of verbenas, grown in pots, growth and bloom particularly considered	3
Best and greatest variety petunias in pots	2

All plants in the above list should be exhibited in the pots in which they were grown, making allowance for the necessary shifts.

CUT FLOWERS.

Largest and best collection of dahlias, not less than 24 named varieties	$5
2d “ “ “ “ “ “ “	3
Best 12 varieties dahlias	3
2d best 12 “ “	2
Largest and best collection of roses named varieties	5
2d “ “ “ “ “	3

Best 12 roses	$3
2d best 12 roses	2
Largest and best collection of verbenas, named varieties	3
2d " " " " "	2
Best 12 distinct named varieties	2
2d best 12 " "	1
Largest and best collection of phloxes, named varieties	2
2d " " " " "	1
Best display of asters	2
" " gladiolus	3
2d best " "	2
Best display of coxcombs and amaranths	2
2d best " " "	1
Best and greatest display cut flowers, in variety and quality other than above	5
2d best " " " " " "	3
Best pair parlor boquets, any style	2
2d best " " "	1
Best pair hand boquets, any style	2
2d best " " "	1
Best collection of native flowers, with list of names	2
2d best " " " " "	1

AMATEUR LIST.

SAME AS IN PROFESSIONAL LIST.

FRUITS GROWN IN OHIO.

APPLES.

Each variety, not less than three specimens, is to be correctly and distinctly labeled and the list handed to the committee. In all cases, the different entries, though they may contain similar varieties, must be of different specimens and shown on separate plates, and properly grouped and placed under the direction of the Superintendent of the Hall. *All Fruits shall have been grown by the Exhibiter.*

Best 6 varieties	$12
2d best 6 "	6
Best approved new variety (not before described)	3
2d best " " " "	2
Best 3 varieties of large—size and beauty to rule	5
2d best 3 " " " " "	3
Best 3 varieties market apples—profit to rule	5
2d best 3 " " " " "	2
Best 1 variety dessert apple—quality to rule	5
2d best 1 " " " " "	3
Best and most handsomely arranged basket of apples containing not less than 1 peck, and made up of not less than 6 varieties	6
2d best and most handsomely arranged basket of apples containing not less than 6 varieties	3
Best display in variety and quality, not less than 15 varieties, by amateur growers,	15
2d best " " " " " " "	10
Best display in variety and quality, not less than 15 varieties, by professional fruit growers or nurserymen	15
2d best display in variety and quality, not less than 15 varieties, by professional fruit growers or nurserymen	10

WINTER APPLES.

Best 10 varieties of apples grown by amateur	$15
2d best 10 “ “ “ “	10
Best 10 varieties of apples grown by professional growers	15
2d best 10 “ “ “ “ “	10
Best 5 plates of large apples—size and beauty to rule	10
2d best 5 “ “ “ “ “	7
Best 6 varieties—profit to rule	12
2d best 6 “ “ “	8
Best basket of 10 varieties, not less than half a bushel	10
2d best “ “ “ “ “	7
Best display, not less than 30 varieties, grown by an amateur, variety and quality to rule	30
2d best display, not less than 30 varieties, grown by an amateur, variety and quality to rule	20
Best display not less than 30 varieties, grown by a professional grower, variety and quality to rule	30
2d best display not less than 30 varieties, grown by a professional grower, variety and quality to rule	20

Best plate of six specimens of any of the following, viz.:

Best	plate six	Baldwins	$2
“	“	Belleflower	2
“	“	Belmont	2
“	“	Canada Red	2
“	“	Celestia	2
“	“	Ben Davis	2
“	“	Fallanwalter	2
“	“	Jonathan	2
“	“	King of Tompkins County	2
“	“	Melon	2
“	“	Northern Spy	2
“	“	Ohio Nonpariel	2
“	“	Peck's Pleasant	2
“	“	Esopus Spitzenburg	2
“	“	Evening Party	2
“	“	Rambo	2
“	“	Rhode Island Greening	2
“	“	Rome Beauty	2
“	“	Roxburo Russet	2
“	“	Wagner	2
“	“	White Pippin	2

PEACHES, PEARS, QUINCES, PLUMS.

PEACHES.

Each variety to be named and distinctly labeled when entered.

Best six varieties, not less than 6 each	$10
2d best six “ “ “	5
Best three “ “ “	6
2d best three “ “ “	2

Best plate of one variety	$3
2d best “ “	2
Best new seedling or variety, if approved by the committee	2
2d best “ “ “ “	1
Best display of not less than 12 varieties, grown by an amateur, quality to govern	20
2d best “ “ “ “	10
Best display of not less than 12 varieties, grown by professional grower, quality to govern	20
2d best display of not less than 12 varieties, grown by professional grower, quality to govern	10

PEARS.

The rule as to numbers, etc., in apples, to apply to pears also.

Best three varieties of summer and fall pears	$6
2d best three “ “ “	3
Best five “ “ “	10
2d best five “ “ “	5
Best 10 varieties of fall and winter pears	20
2d best “ “ “	10
Best half peck of Seckles	5
2d best “ “	3
Best half peck Bartletts	5
2d best “ “	3
Best plate of Seckles	2
“ Bartletts	2
“ Flemish Beauty	2
“ Louisa Bonne de Jersey	2
“ Onondaga	2
“ Buerre Diel	2
“ Duchess d’Angouleme	2
“ Beurre Clairgeau	2
Best three plates of large pears, size and beauty to rule	5
2d best three “ “ “ “	3
Best five plates market pears, profit to rule	8
2d best five “ “ “	5
Best new variety, if approved by the committee	2
2d best “ “ “ “	1
Best one variety of dessert pear, quality to rule	3
2d best one “ “ “	2
Best display of not less than 20 varieties, grown by an amateur, quality to rule	20
2d best “ “ “ “	10
Best display of not less than 20 varieties, grown by a professional, quality to rule	20
2d best “ “ “ “	10

QUINCES.

Best 12 quinces	$3
2d best 12 quinces	2
Best peck “	5
2d best peck “	3

PLUMS.

Best display of not less than 5 varieties	$5
2d best “ “ “ “	3

Best 6 varieties, not less than 6 each	$3
2d best 6 “ “ “	2
Best plate of not less than 12 specimens	2
2d best “ “ “	1

FRUITS GROWN IN OTHER STATES.

The committee are authorized to award special premiums for fruits exhibited from other States, the amounts not to exceed those offered for similar fruits grown in Ohio.

GRAPES—(Hardy).

Each variety to be named and distinctly labeled when entered.

Best 10 varieties, not less than 3 bunches each	$10
2d best 10 “ “ “ “	7
Best 6 “ “ “ “	6
2d best 6 “ “ “ “	4
Best 3 “ “ “ “	5
2d best 3 “ “ “ “	3
Best new and valuable seedling, not before exhibited and disseminated	5
Best display, 15 varieties, 3 bunches each	20
2d best “ “ “ “	10
Best 6 bunches Catawba	3
“ 6 “ Isabella	3
“ 6 “ Hartford Prolific	3
“ 6 “ Creveling	3
“ 6 “ Salem	3
“ 6 “ Concord	3
“ 6 “ Delaware	3
“ 6 “ Ives’	3
“ 6 “ Diana	3
“ 3 “ Iona	3
“ 3 “ Israella	2
“ 3 “ Adirondac	3
“ 3 “ Rebecca	3
“ 3 “ Allen’s Hybrid	3
“ display of Roger’s Hybrids	5

On foreign grapes, the awarding committee will recommend such premiums as it may deem proper.

SIXTH DEPARTMENT.

William Lang, Attending Member of the Board.

FINE ARTS.

DRAWINGS, PAINTINGS, Etc.

Best life-size photograph, colored in oil, by Ohio artist	Diploma and	$10
“ “ “ “ water colors, by an Ohio artist..	“	5
“ portrait from life, in oil		10
“ animal portrait in oil		10

Best specimen of painting, in oil, by American artist	$20
Same, by Ohio artist	20
“ specimen in water colors	Diploma.
“ landscape, from nature, in oil, by an Ohio artist	$10
“ “ “ “ water colors, by an Ohio artist	Diploma and 5
“ original poetical painting, by an Ohio artist	10
“ “ historical “ “ “	10
“ specimen uncolored photograph	Diploma.
“ specimen of not less than 12 different objects of natural history, in water colors, by an Ohio artist	Diploma and $20
“ specimen fruit or flower painting, in oil	“ 5
“ “ “ “ “ water colors	“ 5
“ “ of Ohio landscape, in oil, by Ohio artist	Diploma.
“ exhibition of paintings, by Ohio or foreign artist	Diploma and $10
“ fancy portrait by Ohio artist	“ 5
“ fancy painting in water colors	Diploma.
“ engraving	“
“ wood engraving	“
“ lithography	“
“ porcelain painting and gilding	“
“ specimen penmanship	“
“ crayon drawing	“
“ pencil drawing	“
“ pen drawing	“
“ specimen porcelain photograph	“

SCULPTURE, ETC.

Best sculpture	$10
“ collection of marble work	10
2d best “ “ “	5
Best architectural drawings	10
“ carving in wood	Diploma.
“ collection and greatest variety of insects	Diploma and 5
“ “ “ “ “ Ohio birds, prepared	“ 5
“ “ “ “ “ quadrupeds, prepared	“ 5

DESIGNS.

Best design for farm house	Diploma and $20
“ “ farm barn	“ 10
“ “ carriage house and stable	“ 5
“ “ dairy house	“ 5
“ “ poultry house	“ 5
“ “ farm gate	“ 2
“ “ granary	“ 3
“ bridge (model of)	Diploma.
“ domestic gas apparatus (or model of)	“

Designs must be accompanied with estimates of cost and specifications. Those to which premiums may be awarded will be engraved and published in the report of the Board of Agriculture. To be exhibited at State Fair, and premium to be awarded by the Board at the January meeting.

Best pair ornamental vases	$3

Best specimen of marbelized iron	$5
" " " stone	5
" " " wood	5
" display of hollow iron ware	3
" ornamental statuary	5
" " fruit and flower stand	3

Philosophical, Surgical, Dental, Drawing, Painting, Surveying and levelling Instruments and Apparatus, etc., of Fine Workmanship, exhibited by maker—American Manufacture.

Best surgical instruments	Diploma.
" set optical "	"
" dentist's	"
" set mathematical and philosophical instruments	Silver Medal.
" specimens of dentistry	Diploma.
" theodolite	"
" level	"
" surveyor's compass	"
" achromatic telescope	"
" reflecting telescope	"
" optical apparatus	"
" balance	"
" thermometer	"
" barometer	"
" electro-magnetic apparatus	"
" electric telegraph	"
" electric machine	"
" galvanic battery and apparatus	"
" set drawing instruments	"
" chronometer	"
" clock (8 day)	"
" specimen silver-ware, with agricultural designs, suitable for premiums	"
" " Argantine or Brittania ware	"
" turned and cast Brittania	"

It is understood that all products of industry, competing for premiums, are to be exhibited by or for the maker, or improver, or contriver.

MUSICAL INSTRUMENTS.

Best grand or semi-grand piano-forte	Silver Medal.
" piano, price $400 or less	"
" square piano	"
" violin	"
" reed organ for church, with two or more sets of reeds	"
" parlor organ	Diploma.
" melodion	"
" flute	"
" clarionet	"
" set of band instruments	"

A committee consisting of President Fullington, Secretary Klippart, N. S. Townshend, J. W. Ross, D. McMillan and Wm. B. McClung, visited Cleveland and Toledo, to examine locations offered by citizens from those cities, reported that they were shown several tracts in Cleveland, that the only suitable one was the "trotting park," but that was entirely too far from the depot to be a desirable place. At Toledo, they were shown a tract at Manhattan, the trotting park and the "Swayne" tract.

Delegations of citizens were present from Cleveland, Toledo and Dayton.

It was voted, that the next fair be held at the city of Toledo, upon the "Swayne" tract, so called, commencing September 21st and closing September 25th.

The following resolution was adopted:

Resolved, That in addition to the usual guarantees required from the places where the fairs in future may be located, the following shall be required, viz: That at the place where the fair is held, the local committee shall be responsible to the Ohio State Board of Agriculture for whatever property the said Board may necessarily leave at, in, or on the grounds, or in the city, until the Board shall see proper to remove such property.

The Secretary was instructed to receive bids for the printing, as follows:

8,000 premium lists; 2,000 posters, of three sheets and two colors; 500 complimentary tickets; 100 invitations to Presidents of County Societies; 5,000 entry cards; 1,000 first and second premium cards; 1,000 dinner tickets; 80,000 admission tickets; 75 contracts for refreshment stands; 1,000 return freight certificates, circulars and railroad department cards, for office of Secretary, and such other printing as may be necessary from time to time.

The following awarding committees were selected and appointed:

HORSES.

GEO. SINCLAIR, SUPERINTENDENT.

THOROUGHBREDS.—Alex. Waddle, South Charleston, Clark county; Wm. Warfield, Lexington, Ky; Frank Dunlevy, Newark; R. F. Johnstone, Detroit, Mich.; J. O. B. Renick, Columbus, O.

ROADSTERS.—John H. Evans, Lebanon; J. P. Ross, Cleveland; Joseph Cathcart, Springfield; J. Swetland, London; V. Best, Zanesville.

GENERAL PURPOSES.—J. L. Tyler, Granville; Josiah Kohler, Bucyrus; J. M. Hickox, Cleveland; Thos. Rawlings, Urbana; J. S. Brazee, Lancaster.

DRAFT.—John M. Millikin, Hamilton; Daniel Stocking, Elyria; James Welsh, Marion; Jesse Weirick, Tiffin; H. M. Reed, Sidney.

MATCHED HORSES AND MARES.—John Reber, Lancaster; Harvey Gram, Yellow Springs; E. T. Stickney, Tiffin; W. H. H. Dye, Troy; J. N. Jones, Wooster; Reese Hammond, Green Castle, Indiana,

TROTTERS.—John S. Rappee, Upper Sandusky; Wm. F. Greer, Painesville; R. D. Harshman, Dayton; John L. Winner, Greenville; J. S. Hoblett, Pt. William, Clinton county.

Sweepstakes.—George W. Bedford, Paris, Ky.; George Creain, Cincinnati; E. M. Bennett, Woodstock; D. O. Heiskill, South Charleston; D. Haskall, London.

Jacks and Mules.—Robert Campbell, Circleville; J. T. Warder, Springfield; Henry Kirk, Washington, Fayette county; P. Manchester, Raymond, Union county; Charles Hook, Xenia.

CATTLE.

WM. McPHERSON, SUPERINTENDENT.

Shorthorns.—R. G. Corwin, Dayton; W. R. Duncan, Towando, Ill.; Allen Warren, Adrian, Mich.; J G. Haggerty, Nashport, Muskingum county; John Martin, Union Village, Warren county,

Work Oxen and Fat Cattle.—Peter Hitchcock, Burton, Geauga county; Joshua Boynton, Elyria; T. V. Reber, Upper Sandusky; David Taylor, Columbus; John Spence, New Lisbon.

Dairy Cattle.—R. Baker, S. Amherst, Lorain county; Joel T. Merriman, Burton, Geauga county; H. F. Giddings, Wayne, Ashtabula county; Philo Chamberlain, Twinsburg, Summit county; Edwin Tuttle, Munson, Geauga county.

Sweepstakes on Cattle.—T. C. Jones, Delaware; E. G. Bedford, Paris, Ky.; John H. Spears, Tallulah, Menard county, Illinois; Jesse Hageler, Washington, Fayette county; Calvin Doyle, New Lyme, Ashtabula county.

SHEEP.

T. P. JOHNSON, SUPERINTENDENT.

Merinos.—H. S. Conkling, Sidney; W. H. Witter, Medina; J. C. Stevens, Kenton; Benj. Cope, Smithfield, Jefferson county; Gustin Converse, Pleasant Valley.

Leicesters.—Josiah Hurst, Dover, Cuyahoga county; Wm. Balkwill, London, C. W.; Wm. Mathews, Ætna, Licking county; John L. Meredith, Troy, Miami county; Lester Bartlett, Cardington.

Long Wools.—W. F. Stone, Guelph, C. W.; James Boyd,Tiffin; A. H. Dodge, Trumbull, Ashtabula county; J. H. Shields, Xenia; Benj. Randolph, Somerset, Mich.

Southdowns—George Pow, New Albany, Mahoning county; Hiram Ayers, Akron; Robert Clarke, Washington, Guernsey county; John G. Dun, Columbus; Ed. Newcomb, Dayton.

Fine Wool Sweepstakes.—Thos. Gorby, Randolph, Portage county; J. H. Brotherton, Cedarville; R. M. Montgomery, Youngstown; A. B. C. Hitchcock, Sidney; W. N. Chamberlain, South Charleston.

Long Wool Sweelstakes.—L. Converse, Bucyrus; W. A. Hall, Tecumseh, Mich.; Samuel Laundon, Elyria; C. G. Calkins, Ashtabula; John Brown, Norwalk.

SWINE.

T. P. JOHNSON, SUPERINTENDENT.

Large Breeds.—R. C. Moulton, Woodstock; Talmon Beardsley, Akron; Charles Boesel, New Bremen, Auglaize county; I. C. Wilson, Dayton; Lewis Boyer, Sidney, Shelby county.

Small Breeds.—Jas. B. Jamison, Cadiz; O. M. Lowell, Malta, Morgan county; Chas. Mahan, Van Wert; Samuel Davis, Napoleon; Henry Benson, Cardington.

Swine Sweepstakes.—Christ. Hughes, Bethany, Butler county; John Woodrow Xenia, Geo. B. Deardoff, Canal Dover; M. Harlem, Ridgeville, Warren county; Dyer Reed, Milford Centre.

POULTRY.

T. P. JOHNSON SUPERINTENDENT.

C. W. Potwin, Zanesville; J. H. Eaton, Bellefontaine; Daniel Wissinger, Springfield; W. D. Bickham, Dayton.

MACHINERY, ENGINES, ETC.

CHAS. SMITH, SUPERINTENDENT; CHAS. BABBITT, ASST. SUPERINTENDENT.

CLASS I.—Capt. Barnes, Tiffin; B. B. Barrett, Wooster; Jas. B. Tappan, Akron.

CLASS II.—Mr. Gay, Elyria; Joseph Dull, Mansfield; D. C. Norton, Norwalk

CLASS III.—B. F. Brown, Piqua; P. Wheeler, Kenton; C. S. Gates, Brooklyn, Cuyahoga.

SORGHO.—John H. Branch, Branch Hill; A. A. Woodworth, Irwin Station; Thomas Orbison, Troy, Miami county.

CLASS V.—Joseph Wood, Oberlin; David Edgar, Sidney, Shelby; R. Beatty, Marion.

CLASS VI.—B. F. Reed, Cedarville, Greene county; Jacob Rohrer, Tippecanoe, Miami county; Hiram Smith, Greenfield, Huron county.

PLOWS.—James Hammond, Copley, Summit county; Emanuel Shaeffer, Troy, Miami county; A. D. Gunn, Monclova, Lucas county.

PLOWING MATCH.—Wm. L. Smith, Avon, Lorain county; Peter Kittering, Defiance; Ed. Swander, Tiffin.

DIVISION I. OF CLASS VI.—R. G. Blake, Celina, Mercer county; A. Gaskill, Greenville, Darke county; P. Sintz, Springfield, Clarke county.

DIV. II. OF CLASS VI.—Smith Ferris, Marion, O.; Jacob Shaffer, Upper Sandusky, O.; H. P. Cannon, Twinsburg, O.

DIV. III. OF CLASS VI.—G. W. Roby, Columbus; James Carothers, Mansfield; J. R. Kendall, Sidney, O.

MECHANICS.

O. W. HALE, SUPERINTENDENT.

WORKED METALS.—R. P. Waterbury, Cleveland; I. F. Sieberling, Akron; D. C. Morrow, Bryan.

STOVES, ETC.—Marcus Eells, Dayton; G. W. Galloway, Finley; R. B. Walker, Akron; W. S. Westerman, Dayton, O.

CABINET WARE, ETC.—T. L. Clarke, Maumee City; O. W. Hale, Bath, Summit county; Thomas Elliott, Defiance, O.

VEHICLES.—H. E. Peck, Tallmage; David Gordon, Port Clinton, Ottawa; Charles Erb, Milford Centre; J. D. Knapp, Norwalk; Peter Van Ness, Tiffin; Geo. Ely, Elyria.

WOODEN-WARE.—S. B. Huffman, Findlay; H. T. Rhinehart, Wapakonetta; F. H. Wright, Tallmadge; A. C. Baldwin, Tiffin; P. Close, Fremont.

CHEMICALS.—Dr. J. L. Cassels, Cleveland; Dr. Dascomb, Oberlin; Dr. Bushnell, Mansfield.

STONE-WARE, ETC.—G. N. Abbey, Cleveland; R. A. Alger, Detroit; G. D. Bates, Akron.

FARM PRODUCTS AND MANUFACTURES.

J. S. BROADWELL, SUPERINTENDENT; WM. RAWLE, ASST. SUPERINTENDENT.

FLOUR AND GRAIN.—J. C. Ullery, Covington, Miami county; Alvin Brightman, Bronson, Huron county; Phil. Troutman, Reeves, Wayne county; Jas. W. Knouff, Greenville, Darke county; Simpson Harmount, Canal Dover.

BUTTER, BREAD, ETC.—G. V. Dorsey, Piqua; Mrs. E. A. Shingluff, Canal Dover; Mrs. A. P. Howard, Woodstock; Mrs. J. C. Lee, Tiffin.

POTATOES.—Martin Warner, Tontogany.

VEGETABLES.—W. C. Earl, Toledo; Prof. R. Good, Tiffin; Geo. Buckles, Piqua; Wm. A. Humes, Urbana; Hugh Broome, Cambridge, Guernsey county.

HONEY, PICKLES, PRESERVES, ETC.—J. A. Hawks, Circleville; Mrs. R. A. Henderson, Upper Sandusky; Mrs. King, Toledo; Mrs. H. B. Sherman, Toledo; Mrs. W. W. Armstrong, Cleveland.

DOMESTIC CHEESE.—F. H. Cannon, Bedford; Albert Buskirk, Tiffin; Philip Coe, Milford Centre; H. B. Sherman, Toledo; Abel Krum, Cherry Valley, Ashtabula county.

FACTORY CHEESE.—Anson Bartlett, North Madison, Lake county; M. Andrews, Twinsburg, Summit county; Geo. Anderson, Painesville, Lake county; R. S. Parks, Warren, Trumbull county; N. B. Jenkins, Streetsboro, Portage county.

SWEEPSTAKES ON CHEESE.—Augustus Fenner, Tippecanoe; Jason Robbins, Solon, Cuyahoga county; E. H. Cartright, Hudson, Summit county; C. R. Harmon, Aurora, Portage county; A. D. Hall, Claridon, Geauga county.

MECHANICS' HALL.

BOOTS, ETC.—Geo. F. Marshall, Cleveland; Jas. D. Bell, Mansfield; D. E. Fenn, Sullivan; W. Gerlach, Kenton; J. A. Rettig, Medina.

HOUSEHOLD FABRICS.—La. Q. Rawson, Fremont; D. W. Harris, De Graff; Mrs. R. C. Thatcher, Litchfield, Medina county; Mrs. A. Wheeler, Kenton, Hardin county; Mrs. Col. Gibson, Tiffin.

NEEDLE WORK.—Mrs. M. B. Bateham, Painesville; Mrs. Mary E. Horton, Piqua; Miss Nettie Williams, Avon, Lorain county; Mrs. C. J. Parsons, Sandusky; Miss Carrie Muzzy, Elyria.

MILL FABRICS.—C. Hills, Delaware; John G. Gross, Tiffin; M. A. Anderson, Finley; Geo. C. Anderson, Sidney; J. A. Henderson, Marysville.

HORTICULTURE.

D. C. RICHMOND AND GEO. POWERS, SUPERINTENDENTS.

FLOWERS—AMATEUR.—Mrs. S. L. Boughton, Bowling Green.

APPLES.—Dr. John A. Warder, Cincinnati; S. B. Marshall, Massillon; Giles Boalt, Norwalk; F. Fahnestock, Toledo.

PEACHES, PEARS AND QUINCES.—John R. Miller, Enon, Clarke county; N. L. Woods, Jefferson; E. W. Mears, Milford, Clermont county.

GRAPES.—G. W. Campbell, Delaware; Chas. Carpenter, Kelley's Island; Jacob Zimmer, Miamisburg

FINE ARTS.

EDW. KOCH, SUPERINTENDENT. E. SUTTER, ASST. SUPERINTENDENT.

DRAWINGS AND PAINTINGS.—Hon. J. C. Hall, Toledo; Mrs. Robt. Crum, Toledo; Mrs. Chas. Warren, Tiffin; Joseph Perkins, Cleveland.

SCULPTURE, &C.—H. B. Perkins, Warren, Trumbull county; A. Dodds, Xenia; Chas. Wendler, Tiffin; ——— Jenney, Ottawa.

PHILOSOPHICAL INSTRUMENTS, &C.—J. D. O'Conner, Tiffin; Dr. Horace Coleman, Troy; Dr. Roberts, Mansfield; Dr. E. Keyes, Ravenna.

J. W. Ross, on behalf of the Executive Committee, was authorized to receive bids for the lumber needed at Toledo.

The following resolution was adopted:

Resolved, That Messrs. McMillan, McClung and Turney be appointed a committee, on the part of the Ohio State Board of Agriculture, to issue a circular call to the manufacturers of reapers and mowers in Ohio, requesting them to meet in the State Agricultural rooms, for the purpose of conferring in reference to a trial of reapers and mowers, during the harvest of 1868; and that in case it is deemed advisable, on the part of said committee, to hold the above trial, the President of the State Board shall call a meeting of said Board, at as early a date as possible, for the purpose of determining upon the time and place of holding said trial.

Board adjourned to meet at the call of the President.

The Executive Committee were requested to meet at Toledo, on the 12th of May.

Attest: JOHN H. KLIPPART, *Cor. Sec'y.*
HENRY S. BABBITT, *Rec. Sec'y.*

STATE AGRICULTURAL ROOMS,
COLUMBUS, O., March 4, 1868.

The committee appointed at the meeting of the full Board, March 17th, prepared and issued circulars to manufacturers, in the following words:

OHIO STATE BOARD OF AGRICULTURE,
SECRETARY'S OFFICE,
COLUMBUS, March 4, 1868.

M——— ———

At a meeting of the Ohio State Board of Agriculture, held on the 17th of March, 1868, the following resolution was adopted:

"*Resolved*, That Messrs. McMillan, McClung and Turney be appointed a committee, on the part of the Ohio State Board of Agriculture, to issue a circular call to the manufacturers of reapers and mowers, in Ohio, requesting them to meet in the State Agricultural Rooms, Columbus, O., for the purpose of conferring in reference to a trial of reapers and mowers, during the harvest of 1868, and that in case it is deemed advisable on the part of said committee to hold the above trial, the President of the State Board shall call a meeting of the Board, at as early a date as possible, for the purpose of determining upon the time and place of holding said trial."

A meeting, for the purpose set forth in the above resolution, will be held in the State Agricultural Rooms, in Columbus, Ohio, Tuesday, April 7th, prox., at 9 o'clock, A. M.

Your presence is respectfully requested,

D. McMILLAN,
WM. B. McCLUNG,
N. J. TURNEY,
Committee.

Attest:
JOHN H. KLIPPART, *Sec'y.*

In pursuance of said call, five manufacturing establishments only were represented, and, with one exception, they voted against the trial proposed, and the committee did not deem it advisable to recommend the Board to hold the exhibition.

D. McMILLAN,
Chairman of Committee.
By JOHN H. KLIPPART, *Cor. Sec'y.*

Attest:
HENRY S. BABBITT, *Rec. Sec'y.*

EXECUTIVE COMMITTEE MEETING.

OLIVER HOUSE,
TOLEDO, O., May 12, 1868.

Committee met pursuant to appointment on the 17th of March. Present: Jas. Fullington, President; J. W. Ross, N. S. Townshend and Daniel McMillan. Mr. P. Gregg, of Sandusky, was also present, by invitation, to assist in laying out the Fair grounds.

The following contract was ordered to be completed, as follows:

THIS AGREEMENT, made this 4th day of April, A.D. 1868, between Walbridge & Thomas, of the first part, and the Ohio State Board of Agriculture, of the second part, WITNESSETH, that for the consideration hereinafter mentioned, the said first parties agree to sell and deliver on the Fair grounds, known as the "Swayne tract," lumber, as follows, and for the prices set opposite the respective qualities:

For common pine inch boards, joists, scantling and timber, yard sizes, under 20 feet long	$15 00
Joists, scantlings and timber over 18 feet long, as follows:	
20 feet long	19 00
22 "	21 00
24 "	23 00
For cull pine inch boards, all lengths	10 50
" " joists, scantlings, yard sizes	10 50
" common pine inch boards, 24 feet long	18 00
" dressed shelving, 12 inch stock boards, all lengths	24 00

Said lumber of the usual quality as generally delivered from yards, in such quantities and at such times as the Executive Committee of the Board may order; the amount not to exceed in the aggregate 600,000, and not less than 400,000 feet.

In consideration of the above, the said second parties do agree to pay, on the 10th day of July, 1868, three thousand dollars, and the balance on the whole amount which may be delivered them, on the 25th day of September, 1868.

In witness whereof we do hereto affix our names, this 10th day of April, A. D. 1868.

(Signed) WALBRIDGE & THOMAS,
Party of the First Part.
JAMES W. ROSS,
Party of the Second Part for the O. S. B. of A.

In presence of WM. RAWLE.

The Committee solicited a proposal from Wm. Gregg, for the performance of the labor and superintendence of the grounds, so as to have them all in readiness for the fair. The proposal was made and held over for consideration.

The Committee proceeded to examine the grounds and to designate the locality and size of the horse ring, and the several halls.

The Secretary was directed to request Mr. Buckingham to obtain a copy of the will of the late G. W. Pollock, of Gratiot, Muskingum county, Ohio, so that the Board may know the nature of the bequest.

Ordered. That the printing of the posters be awarded to the Toledo Blade office; the fruit labels and entry cards to the Toledo Commercial office; the premium lists to the Columbus Printing Company, and the admission tickets and premium tickets to Nevins & Myers, of Columbus.

Adjourned, subject to call of the President.

Attest: JOHN H. KLIPPART, *Cor. Sec'y.*
HENRY S. BABBITT, *Rec. Sec'y.*

COPY OF CONTRACT WITH CITIZENS OF TOLEDO.

Know all men by these presents: That we, the undersigned citizens of Lucas county, State of Ohio, are held and firmly bound to the Ohio State Board of Agriculture, in the penal sum of twenty thousand dollars, which sum of money, well and truly to be paid, we do hereby bind ourselves, our heirs, executors, administrators and assignees, firmly by these presents. Sealed with our seals, and dated this —— day of ——, A. D. 1868.

The condition of this obligation is such that, whereas the said Ohio State Board of Agriculture, at its meeting held on the 17th day of March, A. D. 1868, at the city of Columbus, has resolved to locate and hold the annual fair of said Board for the years 1868 and 1869, at the city of Toledo, Lucas county, Ohio, upon the express promises and agreements on our part respectively:

I. That the undersigned shall pay to said Board the sum of five thousand dollars on or before the first day of July, annually during said years 1868 and 1869.

II. That we will procure and give to the said Board, for the purpose of holding the said fairs thereon, a certain tract of land situated in the city of Toledo, known as the "Swayne tract," containing forty-three acres, and other lands adjoining the tract on the north side, sufficient in quantity to make fifty acres in all.

III. That we will cause the bushes and trees on said lands to be trimmed, and the grounds put in such order and condition, ready and suitable for the erection of buildings and other purposes, and at such time as the Executive Committee of said Board shall direct.

IV. That we will furnish the necessary quantity of good water for the use of visitors and stock on said premises during the whole time of each fair as aforesaid.

V. That we will take care of and keep and preserve in good order the fences, buildings, and all other property and effects of said Board, to be put upon said grounds by said Board, and until such time as the said Board may see proper to and shall remove the same; and do and perform all and everything specified and mentioned in items *two*, *three*, *four* and *five* at our own expense, and free from any charges against said Board.

Now if we, the undersigned, shall jointly and severally do and perform each, all and every, the promises, agreements and obligations as above enumerated, on our part, that then, and in such case, these presents shall thenceforth cease and be void; otherwise, be and remain in full force and virtue in law.

(Signed) ROBERT H. BELL, [Seal.]
CHAS. A. KING, [Seal.]
PETER LENK, [Seal.]
H. A. BOYD, [Seal.]
A. B. WAITE, [Seal.]
H. S. WALBRIDGE, [Seal.]
CALVIN BARKER, [Seal.]
A. W. BARLOW, [Seal.]
PAUL JONES, [Seal.]
WILLIAM KRAUS, [Seal.]
J. R. STRONG, [Seal.]
BROWN & MESSENGER, [Seal.]
R. & J. CANNON, JR., [Seal.]
P. F. BERDAN, [Seal.]
C. S. SUN, [Seal.]
J. D. COOK, [Seal.]
W. H. SMITH, [Seal.]
W. J. FINLAY, [Seal.]
[REVENUE STAMP.] ANDREW STEPHAN. [Seal.]

The following communication was received from the city authorities of Toledo:

[COPY.]

CITY CLERK'S OFFICE,
TOLEDO, O., March 11, 1868.

At a meeting of the City Council held March 10, 1868, it was

"*Resolved by the City Council of the City of Toledo,* That, in case the State Board of Agriculture shall locate the State Fair at Toledo, for the years 1868 and 1869, the City Council will provide for furnishing water for use on the fair grounds, and for suitable police to maintain order during the continuance of the fair."

I hereby certify the foregoing to be a copy of the resolution, as unanimously adopted by the City Council of Toledo, on the day and date above mentioned.

Witness my hand and official seal.

(Signed,) G. W. MERRIL,
[SEAL.] *City Clerk,*
Toledo, O.

EXECUTIVE COMMITTEE MEETING.

OLIVER HOUSE,
TOLEDO, O., June 9, 1868.

Committee met pursuant to a call of the President. Present: James Fullington, President, N. J. Turney, N. S. Townshend, J. W. Ross and Secretary Klippart.

The proposition of E. Freeman to Mr. Ross, for superintending the erection of the proper buildings, halls, fences and stalls on the fair grounds was ordered to be accepted, and Mr. Ross' action in the matter confirmed.

The Secretary presented a proof of the new diploma.

Mr. Turney was appointed a committee of one, to attend to the diploma.

The matter of complimentary tickets was discussed without coming to any definite conclusion, except that the Secretary was ordered to send a complimentary ticket to each president of a county society in the State, to write said President's name upon the ticket, and lock up the remainder of the tickets until further advised.

The Secretary was instructed to make the necessary railroad arrangements and to obtain the usual badges for committees, officers and others.

Adjourned, subject to call of President.

Attest: JOHN H. KLIPPART, *Cor. Sec'y.*
HENRY S. BABBITT, *Rec. Sec'y.*

EXECUTIVE COMMITTEE MEETING.

Oliver House,
Toledo, O., July 6, 1868.

Committee met at call of the President. Present: James Fullington, President, Jas. W. Ross, James Buckingham, Treasurer, and J. H. Klippart, Corresponding Secretary.

The committee inspected the progress of the work on the grounds.

Ordered, That the Secretary have a notice of the time and place of the fair published in the papers in North-Western Ohio, North-Eastern Indiana and Southern Michigan.

Ordered, That the Secretary advertise sale of refreshment stands, to take place on the grounds August 11th, to which date committee adjourned.

Attest: JOHN H. KLIPPART, *Cor. Sec'y.*
Henry S. Babbitt, *Rec. Sec'y.*

EXECUTIVE COMMITTEE MEETING.

State Agricultural Rooms,
Columbus, O., July 30, 1868.

Committee met at call of the President. Present: James Fullington, President, N. J. Turney, Daniel McMillen and Secretary Klippart.

Ordered, That the Corresponding Secretary take charge of the Secretary's office during the Fair, make the entries, and from the committee books make up the pay-roll and place it in the hands of the Recording Secretary, who is to draw all drafts for premiums as well as all other drafts upon the Treasurer.

Attest: JOHN H. KLIPPART, *Cor. Sec'y*
Henry S. Babbitt, *Rec. Sec'y.*

In the matter of the will of George W. Pollock, deceased.

[EXTRACT.]

Item eleven.—After the death of my said father and mother, said sum of $4,000, so as aforesaid invested in United States bonds, I hereby give and bequeath to the Ohio State Board of Agriculture in trust, that they shall within a reasonable time after my death, with the same purchase the "Improved American Merino Sheep," as nearly pure as possible, which said sheep shall be kept and bred by said Board in as pure a state as possible, and the *annual* product of said sheep shall be disposed of as follows: That at each annual Fair held by said Board, the said produce shall be shown and the same shall be sold at public auction, and the proceeds arising from said sales shall, under the direction of said Board, be again invested in the same manner and so on annually from year to year, so long as said Board shall exist; my object in this provision of my will is that said fund may serve as a nucleus for the formation of other similar funds and to provide for the dissemination of the best breeds of sheep at such prices as will enable men of moderate means to engage in said business, and also, that I regard agriculture as the foundation of national wealth and prosperity, and that it is the duty of every good citizen, as far as practicable, to lend it all the aid in his power consistent with other obligations; should said State Board of Agriculture cease to exist, then said sum of $4,000 or in case said sum shall have been invested in stocks as aforesaid and which may be in possession of said Board at the time of its dissolution, I hereby give and bequeath to the Governor of the State of Ohio, for the time being in trust, to be by him expended for the purpose of the advancement of the cause of agriculture in the State of Ohio.

In the matter of the codicil to last will and testament of George W. Pollock, deceased.

Inasmuch as I have invested the $4,000 of U. S. bonds, spoken of in items two and eleven of the foregoing will, in stock of the Second National Bank of Zanesville, I hereby declare and it is my will that the income arising from said bank stock into which said moneys have been converted, shall be after my death, disposed of in the same manner and for the same purpose mentioned in item two of said will, and that after the death of my father and mother, said stock shall be disposed of in the same manner and for the same purpose as directed in item eleven for the disposition of said bonds, my intention being to substitute the bank stock for said bonds.

The State of Ohio, Muskingum county, ss:

I, Robert W. P. Muse, sole Judge of the Probate Court in and for said county, do hereby certify the foregoing to be true copies of item eleven and of the codicil to the last will and testament of George W. Pollock, deceased, of said county, as the same appears by the files and records of said court.

[SEAL.] In testimony whereof, I have hereunto set my hand and the seal of our said court this 8th day of August, A. D. 1868.

ROBERT W. P. MUSE,
Probate Judge.

EXECUTIVE COMMITTEE MEETING.

OLIVER HOUSE,
TOLEDO, O., August 11th, 1868.

Committee met in pursuance of the adjournment on the 6th ultimo. Present—James Fullington, President, Messrs. McMillan, Ross, McClung and Turney.

The refreshment stands and other privileges upon the Fair Grounds were sold at public auction, as follows:

COLD LUNCH STANDS.

No.	Name	Amount	Total
No. 1.	W. L. Marion & Co., Toledo, O., for	$150 00	
2.	Same	125 00	
3.	Chas. Vilhauer, Toledo, O	90 00	
4.	John Cousins, Xenia, O	175 00	
5.	M. M. Goulden, Toledo O	209 00	
6.	Wm. Heulzter, Toledo, O	90 00	
7.	Rich & Garner, Toledo, O	90 00	
8.	Henry Kerr & Co, Toledo, O.	90 00	
9.	Duprez Bros., Toledo, O	90 00	
10.	Ed. Freeman, Toledo, O	185 00	
11.	Tigger and Hagener, Toledo, O	70 00	
12.	James Riddle, Toledo, O	50 00	
13.	V. Beiter, Toledo, O	60 00	
14.	Same	150 00	
			1,615 00

EATING STANDS.

No.	Name	Amount	Total
No. 1.	Chas. Vilhauer, Toledo, O	$165 00	
2.	David Johnson, Toledo, O	150 00	
3.	Richard Garner, Toledo, O	120 00	
4.	Wm. Merritt, Toledo, O	110 00	
5.	H. L. Phelps, Toledo, O	130 00	
6.	M. Clumm, Toledo, O	120 00	
7.	S. S. Kingsley, Toledo, O.	135 00	
8.	Leyburn & Phillips, Toledo, O	110 00	
9.	C. Eidman, Dayton, O	80 00	
10.	John Duffey, Toledo, O	80 00	
11.	P. Cunningham, Toledo, O	80 00	
12 and 13.	George Fisher ($140 and $115)	255 00	
			1,535 00
			3,150 00

POP-CORN STANDS.

No.	Name	Amount	Total
No. 1.	J. L. Baker, Dayton, O	$145 00	
2.	J. W. Heidler, Dayton, O	130 00	
			275 00

ICE-CREAM CANDY STANDS.

No.	Name	Amount	Total
No. 1.	J. L. Baker, Dayton, O	$140 00	
2.	Same	210 00	

INDIA RUBBER BALLOONS.

No. 1.	Cox & Payne, Dayton, O	$75 00
	Total	$3,850 00

Attest: JOHN H. KLIPPART, *Cor. Sec'y.*

HENRY S. BABBITT, *Rec. Sec'y.*

MEETING OF THE BOARD.

OLIVER HOUSE,
TOLEDO, O., Sept. 22d, 1868.

The Board met at call of the President. All present except Mr. Ross, who was sick.

The condition and prospects of the Fair in progress were discussed, and the Secretary was ordered to have a programme for the remainder of the Fair printed and distributed upon the grounds, as follows:

PROGRAMME FOR THE OHIO STATE FAIR FOR 1868.

Committees will be called at 9 o'clock this Wednesday morning at the President's tent.

Wednesday.

HORSES.—Draft, roadsters, saddle class, jacks and mules; light harness.

CATTLE.—Work oxen, steers, fat cattle and milch cows.

SHEEP.—Merinos, Southdowns and fat sheep. Small breed swine.

Thursday.

HORSES.—General purposes, trotters, matched horses and mares; double team trotters.

CATTLE.—Thoroughbred cattle in all classes. Sweepstakes on fat cattle.

SHEEP.—Long-wool. Cashmere goats.

SWINE.—Large breeds. Poultry.

Friday.

HORSES.—Thoroughbreds, sweepstakes on trotters, sweepstakes on horses, sweepstakes on colts.

Committees will commence their duties in Floral Hall, Manufacturers' Hall, Mechanics' Hall, Domestic Hall, Fruit Hall, Farm Product Hall and Fine Art Hall on Wednesday, at 10 o'clock.

AUCTION.

Parties wishing to sell animals or articles must notify the Secretary by Thursday morning, and then an auctioneer will be employed to sell on Thursday and Friday.

By order of the Board,

JAS. FULLINGTON, *Pres't.*

JOHN H. KLIPPART, *Sec'y.*

Board adjourned to meet at the close of the Fair, on Friday evening.

Attest: JOHN H. KLIPPART, *Cor. Sec'y.*

HENRY S. BABBITT, *Rec. Sec'y.*

OHIO STATE AGRICULTURAL CONVENTION.

TWENTY-FOURTH ANNUAL SESSION.

SENATE CHAMBER, COLUMBUS, OHIO,
Jan'y 6, 1869—10 o'clock A. M.

The Convention was called to order by the President, James Fullington.

On motion, the Secretary called the roll of counties, and the following delegates responded:

COUNTY.	NAME.	RESIDENCE.
Allen	J. R. Hughes	Lima.
Ashland	Jas. Alberson	Ashland.
Ashtabula	D. L. Bailey	Jefferson.
Athens	A. W. Glazier	Amesville.
Belmont	Isaac Welsh	St. Clairsville.
Brown	A. M. Ellsbury	Georgetown.
Butler	Fergus Anderson	Hamilton.
Carroll	Jas. M. Kane	Scroggsville.
Champaign	W. A. Humes	Urbana.
Clarke	Amos Whitely	Springfield.
Clinton	James Hoblett	Port William.
Columbiana	John Robinson	West Beaver.
Coshocton	Wm. Hanlon	Coshocton.
Crawford	Josiah Koler	Bucyrus.
Cuyahoga	J. M. Hickox	Cleveland.
Darke	John L. Winner	Greenville.
Delaware	Reuben Durfey	Delaware.
Erie	B. L. Hill	Sandusky City.
Fairfield	J. T. Buzby	Lancaster.
Franklin	B. F. Reese	Columbus.
Geauga	Peter Hitchcock	Chardon.
Greene	Wm. McPherson	Xenia.
Guernsey	Hugh Wilson	Cambridge.
Hardin	J. C. Stevens	Kenton.
Harrison	Jacob Jarvis	Cadiz.
Hocking	J. C. Rochester	Logan.
Huron	Oscar Welsh	Norwalk.
Knox	John D. Thompson	Mt. Vernon.
Lake	Harrison Carroll	Painesville.

Logan	D. W. Harris	Bellefontaine.
Lorain	I. S. Metcalf	Elyria.
Lucas	Alonzo Colgrove	Toledo.
Madison	J. Swetland	London.
Mahoning	L. T. Foster	Youngstown.
Marion	Everett Messenger	Marion.
Medina	Wm. Bennett	Brunswick.
Mercer	Jacob Broadwell	Celina.
Miami	Wm. B. McClung	Troy.
Montgomery	M. Eells	Dayton.
Morgan	A. S. Dickey	McConnelsville.
Muskingum	V. Best	Zanesville.
Noble	Wm. J. Laughlin	Sarahsville.
Ottawa	Elijah Lattimere	Port Clinton.
Pickaway	N. J. Turney	Circleville.
Portage	R. P. Cannon	Aurora.
Preble	H. W. Dooley	Eaton.
Putnam	John Maidlaw	Ottawa.
Richland	A. C. Welch	Mansfield.
Sandusky	I. D. Botefur	Fremont.
Seneca	E. T. Stickney	Tiffin.
Shelby	Wm. A. Carey	Sidney.
Stark	Levi Stump	Canton.
Summit	J. Park Alexander	Akron.
Tuscarawas	Geo. Riker	New Philadelphia.
Union	J. W. Robinson	Marysville.
Warren	G. W. Carey	Lebanon.
Washington	P. B. Buell	Marietta.
Wayne	I. N. Jones	Wooster.
Williams	D. C. Morrow	Bryan.
Wood	J. W. Ross	Perrysburg.
Wyandot	Curtis Berry, Jr	Upper Sandusky.

COMMITTEE ON BUSINESS.

On motion, the following named members were appointed a committee to prepare business for the Convention: Wm. B. McClung, of Miami; Fergus Anderson, of Butler; and R. P. Cannon, of Portage.

AGRICULTURAL FUND.

Mr. Welch, of Richland, made an inquiry in reference to the funds received by their county. The enumeration of 1850 gave them $150.43. For the last year they get but $125.00. He desired to know why this was so.

Mr. Klippart. I have taken pains to go over every county, and ascertain what they draw. There is a great deal of laxity in this matter by societies and by commissioners. A good many are going on the population of 1850, whereas it should be based on the census next preceding the date of the certificate. They must go on the basis of 1860. Some, not understanding it, take the census of 1868, which is wrong.

WHEAT CULTURE.

Mr. Welch, of Richland county, during the absence of the committee on Business, offered the following resolution:

Resolved, That the State Board of Agriculture offer a premium of $100 for the greatest amount of wheat grown on one acre of land, the mode of cultivating and cost of growing the same to be given by the producer. Premium to be awarded in the year 1870.

Mr. Welch. Wheat-growing in the State of Ohio is likely to become a failure from some cause or other. There has something left the soil which seems to be necessary to produce wheat of the right kind. Years ago it was no trouble to raise wheat, or, at least, but little trouble. When my father moved to Springfield township, Richland county, we commenced the operation of underbrushing and clearing of the land on the last day of October or first day of November. The seed was sown broadcast, and dragged in with a pair of oxen. The next summer we harvested a good crop of wheat, of good quality. Now, it seems almost impossible to get wheat by any culture.

We have been offering premiums for so many acres, and it has been done *after* the wheat was planted. Now, if the Board offers that premium to be paid next year, there is no man that has yet prepared his ground for that crop. I have heard of men who say they can grow a hundred bushels per acre, if they were justified in the expense of doing it. I would like to see it done. I would like if we could get seventy-five or even fifty bushels to the acre, of good sound wheat, having all the qualities of the wheat raised in years gone by, not your harsh, dried grain which is produced now, which will not make flour fit for anything, unless it is for Graham bread for dyspeptics. It is difficult to get flour out of such wheat. I have been in the habit of making flour for the last forty years, and I find that every year it is growing more difficult. We got this year, in Richland county, a fair quantity of wheat, but it is of the poorest quality. You may take the best wheat called No. 1, and it won't make a good quality of flour. It is not in it; and when it is not in it you cannot get it out of it.

I have offered this resolution in order to encourage wheat-growing in Ohio. Let men take hold of the matter, and take the trouble to experiment on an acre, and if they can get the premium it will pay them for the experiment; and by so doing we may find out what is the matter—what is necessary to put upon the soil in order to bring it back to such a condition as to grow wheat as we formerly did.

Mr. Welch, of Belmont. I think one acre too small a lot to test the matter of raising wheat. I move to strike out "one acre," and insert five or ten acres—would say ten. I think it would be advisable to pass the resolution in its amended form. I think this is one of the subjects that demands the attention of this Convention and of all the people of Ohio. It is one of the most important subjects, perhaps, that can possibly come before this Agricultural Convention.

It is a lamentable fact that this product has been yearly diminishing, and is likely to run down and become a failure. This does not likely depend on the exhaustion of the soil. I believe the soil in the wheat region is better than it was twenty-five years ago. It is from neglected culture, or not, perhaps, so much from neglected culture as from being interfered with from local causes, and from what we hope to be temporary causes—the wheat midge, rust, freezing out, &c.—things that could not very well be controlled by us. We must learn to meet these things. There is a way, no doubt, to do it, and it is the interest of this Convention and all the people we represent, to encourage whatever will tend to insure a good crop of wheat in the country.

The interest of the country and the welfare of the people depend largely upon this. Now, to experiment on one acre will be of very little benefit to the country. Any person that is farming at all can prepare one acre of ground, by manuring heavily and selecting a particular acre which is not liable to freezing out in winter or injured by other depredations, whereby it is attacked and destroyed, and can produce on that acre a good, heavy crop. But we want something that will be of permanent and general benefit to the people of the State. Let them select ten acres that they can not manure very heavily, and give it good attention, and get the largest crop they can from it. I think this will be of more general advantage than to confine it to one acre.

R. R. Donnelly. I move to amend by making the number of acres five and the premium $1,000. I think $100 would be a small affair. The other will enable men to try experiments and find out the cause of failure. Without the success of this crop there is not much safety for any of us. We all hang upon the shoulders of the producing class. We are all either consumers or producers. What do men who are consumers towards enriching the country? Nothing at all. Without encouraging these hard-fisted and honest men, without giving some liberal premium to promote the agricultural interests of the country, we are gone up. No matter whether we come to specie payment or not, this is a matter involving our own existence.

Mr. Messenger, of Marion county. I think one acre too small an amount, and $100 too small a premium. Five acres and two hundred dollars an acre I think is an extreme. I think we should be guided here by such a course as may be used generally in raising wheat, and not offer a premium to persons who might take five acres of ground and raise the largest crop of wheat, by pursuing such a course as farmers would never follow. Let us pursue a course with such an amount of ground that men cannot go to so much expense on it but that farmers generally can follow out their plans. If we would say ten acres and make the premium $300, I think would be better.

Mr. Reese, of Franklin county. I think ten acres too much. Five acres are enough for a fair experiment. If the prizes were given for two years it would be fairer. If there was a failure the first year men would then be induced to try again. If it is for one year, and there is a failure, a majority would haul off. Therefore, I am in favor of dividing it, and giving $500 a year for two years on five acres of ground, which would give a better chance than if the experiment is made in a single year.

Mr. G. S. Innis, of Franklin. I think this a very important subject, perhaps more so than any that will be brought before this Convention. No doubt, most of the thinking men of this Convention feel that the glory of Ohio is departing, so far as the wheat crop is concerned. We used to export millions of bushels; now, we raise scarcely enough to bread ourselves. When I was a boy, we used to raise thirty-five or forty bushels to the acre; now we don't average more than from five to ten bushels to the acre. What is the cause of this decline? That should be the question, and how can we counteract the influences which cause this decline? We may offer premiums for a large or small quantity, but if we do not do this we will do no good. We all know that where a piece of ground is cropped from year to year, and nothing put back, the land must get poor. I think the trouble is that we have been taking measurably out of our soils the ingredients necessary to the wheat crop, and not returning it. We want to find what the proper ingredients are which we should return. This will be attended with expense and trouble. And if it is to be spread over ten acres or five acres, the experiment may cost more than men can spare, except men of large wealth. I am in favor, therefore, of a smaller piece of ground and a smaller premium, and to try it year after year. If a thousand dollars is expended, it would better be continued over three or four years. One year is not sufficient to test it, as it might be a good year or a bad one. Still I think it is not all in the soil. You may clear off a piece of good new land, and sow it in wheat, and will not get such crops as we got twenty-five years ago.

The question comes up, how much of this is owing to the soil and how much to the climate. These things should all be taken into consideration. Would it not be better to take a smaller piece of ground so that men of smaller means may take part, rather than a large piece by which only men of great wealth can compete for the premium? I think one acre is enough on which to try the experiment at first. Men who have handled manure may not understand how much manure it takes from year to year to keep ground in a high state of cultivation. If even fifty dollars an acre are thus expended it will pay. I think it would be better to have a number of experiments; and supposing that one experiments on ten acres, let him put one acre in on one plan and another on another, and let the man of smaller means, with his one acre, compete for the premium.

Dr. Carey, of Shelby. I am in favor of operating sometimes on a small scale and sometimes on a large scale. I am not chemist enough to analyze my soil to know what it does lack. But we farmers in this country too often do business after a slovenly manner. Some of the gentlemen speak of the great cost of preparing land for wheat. This is a matter I do not well understand. We know that we can most effectually ruin a wheat crop by putting too much manure on it; that it will go too much to straw, and fall down and not head. We cannot, however, control the elements, and I think that is the great difficulty. We live here in neither a northern or southern climate; our wheat is often winter-killed; no doubt the farmers are frequently to blame. Some have been in favor of plowing deep, mellowing up the ground and preparing it in the very best order to receive the grain, leaving the ground in a loose condition; that kind of ground, in a winter where we fail to have snows, must generally freeze out, and requires thorough rolling and tramping even. If we would turn the cattle of a thousand hills on it before sowing I believe it would be the better. We don't pretend to have a rich county of land; we have to lament that we live in rather a sterile county—parts of it, at least, and have to labor hard to raise bread; still I think the more intelligent men who are now trying to raise wheat in Shelby county are succeeding admirably. This year, as the gentleman states, we have our hard, chaffy kind of wheat from which it is hard to make good flour. But we have wheat in Shelby county that makes excellent bread, though we have no wheat that can be styled No. 1. Our farmers there, know, however, that if they do not farm right now they will not produce anything.

Some men are in favor of plowing under all manner of stuff growing out of the soil. Reason will teach us that it is better to clear the ground of all rubbish, because it will not allow the land to settle down, and the winter will kill it. I think that the wheat is better as we advance north or south than it is here; as we advance toward the lake it is better than it is here.

There has nothing been said on the subject of spring wheat in this connection. We may yet be driven to raise spring wheat for our main supply, and it may, perhaps, be as well to offer a premium on spring wheat. A gentleman on the cars told me he had raised thirty-five bushels of good solid spring wheat to the acre. We know those eastern people have been rather averse to eating spring wheat flour; but the time may come when it will set pretty well on their stomachs.

As to the amount of ground for the experiment I think one acre too small, and I think $100 entirely too small a premium. I would make it either five or ten acres.

Mr. Hughes, of Allen County. I think the success of the wheat crop depends about as much on the condition of the weather as on the condition of the ground. You may sow ten acres of wheat on low ground and it will be a failure; you may sow ten acres on high ground and it may be a failure; you may sow early or late in the season and it may be a failure. If the experiment is made on a number of acres, so that the farmer may try an acre on high ground, one on low ground, one on ground that has been thoroughly manured, another on clover, stubble, etc., in that way may we determine which is the best ground or location for that year. I would be decidedly in favor of making the number of acres small.

REPORT OF BUSINESS COMMITTEE.

The committee on Business being ready to report, the resolution was, on motion, laid on the table to allow them to report, when Mr. McClung, from the committee on Business, presented the following report:

Resolved, That we, as representatives of the industrial interests of Ohio, do re-affirm our convictions in reference to the Agricultural and Mechanical College, as expressed by this Convention in the years 1865, '66, and '67.

THAT WHEREAS, There is an effort being made by citizens of Canada and the United States to have re-enacted the treaty to regulate the trade between the United States and British Provinces of North America, and believing, as we do, that such action is prejudicial to the best interests of the producing and industrial classes of the United States; therefore,

Resolved, That in the opinion of this Convention such treaty ought not to be entered into by the United States.

Resolved, That the Convention urge upon the members of our Legislature the necessity of enacting such laws as are necessary for the protection of the cattle interests of this State against the introduction of Texas cattle within the State, and the disease known as Texas fever; also, all other infectious and contageous diseases amongst all domestic animals, especially hogs and hog cholera.

Resolved, That it is the duty of the State Board of Agriculture to recommend to county and independent societies that the best mode of conducting their respective societies is upon a purely agricultural and mechanical basis.

Resolved, That the distribution of our State agricultural reports by partisans and for partisan purposes, is detrimental to our agricultural interests, and should be discontinued; and that we recommend their distribution through and by the officers of each county agricultural society, where such county society exists.

W. B. McCLUNG,
J. P. ANDERSON,
R. P. CANNON,
Committee.

On motion of Mr. Donnelly the report was accepted.

AGRICULTURAL COLLEGE.

Mr. Hitchcock. I would like to ask the chairman of the committee if they indorse the action of the Legislature in regard to the Agricultural College.

Mr. McClung. I would say that we intended to do that. Heretofore we have been instructing the Legislature, and, so far as the committee is concerned, it has no fault to find with the Legislature. They have appointed a committee to examine locations, and to look to proposals made, and as our resolution was before them, we thought that sufficient.

Col. Harris wished the chairman of the committee to state in brief what the action of the State Board had been in regard to the Agricultural College.

Mr. McClung then read from last year's report of the Agricultural Convention the resolution adopted in reference to the subject.

DISCUSSION ON WHEAT CULTURE RENEWED.

On motion, the resolution was passed by for the present, and the resolution offering a premium on wheat culture taken from the table.

Judge Lang, of Seneca county, offered the following resolution as a substitute for the resolution and amendments:

Resolved, That for the Fair of the year 1870 there shall be offered by the State Board of Agriculture one first premium of $500 and one second premium of $300, for the greatest quantity of wheat raised on five acres of land in this State in 1870; that the producers competing for the premiums shall, at the time of the making of their entries, furnish the Secretary a full and complete statement of the locality and quality of the soil where the wheat may be raised, its exposure to the sun, and whether surrounded by hills or forests, the manner of culture, including number of plowings and depths, the quality of manure, if any, and how applied, the kind of wheat, the time when, and manner of, sowing, harvesting and threshing, accompanied by the affidavit of the producer, and such other proof as the Secretary may require concerning the truth of the statement.

Judge Lang. The time has long since gone by when you could cultivate wheat by chance, as we used to get it from the virgin soil. In order to raise wheat in Ohio with profit, we must properly prepare the soil and manage the cultivation of the wheat on scientific principles, or else one-half of our labor will be lost. If we read the reports on wheat culture in foreign countries, and find how much they produce to the acre, our minds are forced to the conclusion that we will have to put the culture of wheat in Ohio through an entire revolution, in order to produce the results we should. It is necessary that a new impetus be given in raising this great staple of the States. In offering a premium, we must not have too small a quantity or too large a quantity. You must strike at the governing criterion, and it seems to me that less than five acres would be too small a quantity and more than five probably too large a quantity. In order to enlighten the community, we want to know, in our cultivation of wheat, what kind of soil it was raised on, what the exposure was, the locality where raised and all about it, so that we may be governed by it as a precedent to encourage others in the enterprise. I think this resolution will probably cover the ground and meet the approbation of all.

Mr. Alexander, of Summit. I think that probably the bushels should be specified at not less than forty-five bushels per acre. Our Minnesota friends claim that they can raise seventy bushels. This is probably the largest premium that has ever been offered for such a purpose in the United States. This is our great staple—the source of the greatest wealth. Everything, as friend Donnelly remarked, must grow up out of the soil. There is another thing, I think, should be taken into consideration, though I do not wish to lumber the resolution too much. But it seems to me that the wheat crops for the next five years should be just as well specified as that one. I am one of those who think that the rotation of crops has as much to do with the wheat crop as many other things.

Mr. McMillan, of Greene. On the finest soil in the United States I do not know that they reach forty-five bushels to the acre. We should be careful not to destroy our liberality by any such amendments. I think the amendment would have that effect. While I am in favor of liberal prizes to men who shall make investigations by which the country shall be benefited, yet I think it best not to go to extremes. Therefore, I move to strike out of Mr. Lang's resolution $500 and $300, and insert $300 and $200. I think it would then cover the ground and give ample compensation.

Mr. Alexander. It has been suggested that it should be tried on old ground. A friend, on old ground, raised on five acres forty-six bushels to the acre.

Mr. McMillan. I object to confining it to not less than forty-five bushels to the acre, or requiring men, in this experiment, to reach forty-five bushels to the acre. I think that point must be reached gradually. I have heard of men doing such a thing, but have never seen it. I think we had better leave the number of bushels unlimited.

Mr. Stevens, of Hardin. I think many of these propositions ought to be left to the good judgment of the State Board, who are looking to the interests of the competing parties. When we look back twenty-five years, say to 1840, the wheat crop of Ohio averaged about eighteen bushels to the acre. The reports for 1865, for Ohio, show that the average was only nine bushels to the acre. Certainly there ought to be some inducement offered on the part of the Board to enhance the state and national wealth of our citizens. I think it may be well enough to fix the amount of land on which to try the experiment, but the amount of the premiums to be given, I think, should be left to the judgment of the Board. In my opinion, the great drawbacks in wheat culture arise from a want of a knowledge of the quality of the soil, the manner of tillage, the use of proper seed, the use of proper implements, &c. These are considerations requiring more thought. There is the great trouble with the agriculturists of this country. They do not give their calling that attention and thought which would develop it, and bring results that would make the business remunerative, and even honorable and respectable. We should understand the science of chemistry and other sciences, in order that we may be fully prepared to make a judicious and proper selection of soil, and know the time in which it should be sown, the manner in which it should be put in, the proper location, &c. I think, in this experiment, persons should not be required to produce forty-five bushels to the acre. I think the amendment of Mr. McMillan is generally acceptable.

Mr. Broadwell, of Mercer. I would be glad if persons competing would be required to give the cost per bushel of raising the wheat.

The President. I think it is not proper to tie the State Board by too many restrictions. My own conviction is, that the Board will properly attend to the matter. I would suggest that the entry be made the year previous, as we have a good many chance crops producing forty to forty-five bushels to the acre, which should not come in competition.

Mr. Donnelly. I would suggest that the premiums be $100 for the largest amount raised on one acre, $200 for two acres, $300 for three acres, and $500 for the largest yield on five acres; and, also, that the first be not less than sixty bushels to the acre, the second not less than fifty, the third not less than forty-five, and the fourth not less than forty.

Mr. Jones, of Wayne. I suggest that the Board have the permission of this Convention and may feel authorized in allowing a liberal premium for the best crops of wheat raised. I believe that would settle a great deal of trouble on this subject.

On motion of Mr. Welch, of Belmont, the resolution and amendments were referred to a select committee of three, to report in the afternoon. The Chair appointed Messrs. Welch, of Belmont, Messenger, of Marion, and Welch, of Richland on this committee.

PRIZE FOR BEST ESSAY ON DISEASES OF WHEAT, ETC.

Mr. Jones, of Wayne, offered the following:

Resolved, That a prize be given for the best and most practical, and practicable paper on the following subjects: Diseases and enemies of wheat, and the best rotation of crops, premiums to be allowed by the State Board and all papers to be sent to them by November 1st, 1869.

Judge Lang moved to amend by striking out "enemies" and inserting "causes that injure wheat."

Col. G. S. Innis, of Franklin. It has been my impression that one of the causes was the bleakness of the climate, and the force of the prevailing north and north-west winds. As a proof of this the climate of Illinois is improving. There they are cultivating forests, while we are destroying ours. And wherever they raise good wheat in Illinois they have planted borders of some kind.

The amendment was accepted by the author of the resolution, and the resolution as amended adopted.

ENCOURAGEMENT TO MANUFACTURERS.

Mr. Welch, of Richland, offered the following:

Resolved by this Convention, That the State Board of Agriculture offer a premium of $500 to the best manufacturing establishment of woolen goods in the State of Ohio—the manufacturer to exhibit one piece (not less than 20 yards,) of broadcloth for gentlemen's wear, one piece of casimere, one piece of satinett, one pair of blankets, one piece of flannel and one piece of jeans.

Mr. Cannon. I think the premium too high, and move to strike out "$500" and insert "a liberal premium."

Mr. Welch, of Richland. I came down here and went into the Wool-Growers' Convention and found five or six there. I was elected an officer, though I knew nothing about it and never raised a sheep or a pound of wool. You protect the manufacturer and the producer will protect himself. If these gentlemen when the wool excitement was so great, had invested one-half of the means in the manufacture of woolen goods at home, all would have been right to-day. Instead of this, they have been shearing their sheep and sending the wool to New England to be manufactured, and we have been sending our wheat there and our corn and pork. Every thing is taken from the State, leaving it barren and sterile and making it so that after a while it will produce nothing. In order to encourage these wool-growing brethren I have offered this resolution. Let us offer a large premium, and let there be a large competition. These goods of domestic manufacture are the best we have. They are not so glossy as some, but are really the best. Now, the complaint is that the sheep are being slaughtered; I venture to say that from the first of July last until next April a million sheep will be slaughtered and their pelts thrown to the dogs and chickens. I am in the habit of selling farm stock and implements at auction; last spring I sold sheep at $7 per head; those very same sheep sold last fall at $1 per head on nine months credit. Many sold their hay at $20 a ton and their sheep at a dollar per head; they were afraid and panic stricken; there is no cause for it. If you can get sheep at a dollar per head, you can feed them on hay at $20 a tun and make it a paying business, or on oats at fifty-five cents or corn at a dollar per bushel, and make it a paying business. There is no likelihood of wool being less than fifty cents a pound, and it is perfectly ridiculous that men should become discouraged and frightened and destroy their flocks. Offer this premium and you may call out the manufacturing interest and a spirit of enterprise and competition, and encourage manufacture, and thereby encourage wool-growing. We are behind the most of the nations in this respect. We have the requisite manufacturing power; we have the water, the coal, the men, the wealth and all the means.

In our county there are to-day $600,000 in the town of Ashland, locked up in bonds, etc., doing nobody any good. Go to work to establish manufacturing establishments. Go to New England and get operatives if we have not got them here, and we can manufacture our wool into cloth much cheaper than to transport it and transport the grain and meat to feed the men to manufacture it there—the wool passing through three or four hands before it reaches us in the cloth again.

Ohio is rich in natural resources. Ohio is the greatest State in the Union. The United States is the greatest country God ever made, and Ohio is in the heart of it. Men go from Ohio east, west, north and south, and come back and say there is no place like Ohio. Home and mother are the two nicest words in the vocabulary. They come back and say, "Ohio is my home; there is no place like it; I was born here, and reared here, and will die here!" Now, do something for your State by encouraging the establishing of manufactories. I speak of this, particularly, because there is a great howl and cry about the depreciation of wool. This is only temporary; it will last but one year; from seven dollars down to one, in a year, is too great a fall to be permanent; there will be a reaction.

Mr. McClung. Mr. Welch talks about protection and encourages men to go to work to raise more wool. But can they afford to raise wool for fifty cents a pound? In Ohio a very large portion of the land is worth $80 to $125 per acre. If my friend, Mr. Welch, would take the trouble to examine agricultural authorities, as to about how many sheep can be kept and taken care of, per acre, he will find that it will be about three sheep that you can pasture and raise feed for, per acre; that will give, at four pounds per sheep, twelve pounds per acre—that is above the average clip in Ohio or any other State. At fifty cents per pound, you have got six dollars per acre for the rent of your land. Now at six per cent. interest for your land, at $100 per acre, the time and labor that is required to put it in order, the taxes to be paid, etc., and I ask my friend Welch, and this Convention, wherein the wool-grower's interest will be protected by selling wool at fifty cents per pound.

Those who make our laws have discriminated in favor of the manufacturer against the producer. The products of the land have been so little cared for that the agriculturists of Ohio have had to use the utmost economy to work along and exist, and to-day the fact stares us in the face that more farms are for sale than ever before. One reason for this is, because the wool interest, so far as it was concerned, was not protected to such an extent as to enable people to grow wool upon the lands in Ohio. I say here, that in my judgment the legislation of the country and our General Assembly has not been to protect and care for these agricultural interests as they ought to have been cared for, being as it is, the basis of prosperity, not only of Ohio, but the basis of prosperity of this country. The tendency has been continually to take away from the farming and mechanical interests the best talent and energies, and direct them into other channels. If this tendency shall continue, the condition of the great agricultural interests of this country will be no better than Russia, and the farms be carried on by the capitalists of the country. Unless the agricultural and mechanical interests of the country are better cared for by the men who make our laws, this will surely be the result.

Is there any intelligent gentleman here who believes that the intelligent part of community will continue farming the soil, when an examination of the statistics of the crops will show them that, on an average for the whole country, not more than three per cent. is realized on the money invested, while the bonds of the Government yield more than twice that amount? We lose millions of dollars every year because the agricultural and mechanical interests are not represented in the halls of the nation's congress. These interests will not be properly cared for unless we send men there who are themselves interested in them. Legal gentlemen get together and adjust the tariff laws for the producing interests of the country. They get together and say we can produce wool for fifty cents a pound, and my friend Welch seems to agree with them in that opinion. I say the agricultural and mechanical interests of the country have a right to demand protection equal to any other interest in the country. It is high time that this Convention of farmers and mechanics in Ohio should stand up and declare for their rights, and demand that the legislation of the country should not be controlled against them. These great interests are being made of secondary importance. The men who represent these interests ought to be in the lead, but they no longer occupy that position. The interests of the capitalist are being more cared for; and if this course is continued, farmers will become a set of serfs instead of a high-toned, independent, intelligent people. Shall we suffer this? I say, that in my opinion we have rendered to the manufacturers quite protection enough. The want of protection to agriculture, however, is so great, and the returns on the money invested in this branch of industry so small, that capital does not seek that kind of an investment.

Then, gentlemen, let us stand up in our manhood, and demand our rights, and we shall be protected. We have the power, if we put it forth, to compel the different political parties to give us that which we have a right to. It is becoming a matter of fact, so far as the political parties are concerned, that we are treated by one about as by the other. While I have been a partisan all my life, I am ready to stand up in defense of these interests, and for the protection of the industrial classes, upon which the prosperity of our country depends. [Applause.]

Mr. Stevens. I think the gentleman who has just spoken, has struck the right vein at the proper time. Nine-tenths of the population of the United States belong to the industrial classes, and much the greater portion of the wealth of the country is held by agriculturists. If this is so, why should not the suggestions made by my friend McClung be respected and put into practice? Why should not the agricultural interests of the country have that proportion of representation in the halls of Congress, and in the Legislatures of our several States, that the importance of this interest, and the numbers engaged in this branch of industry require? It is, in my judgment simply because we have never had the manly independence before to state our reasons and demand our rights. Our population must be educated up to that point, and instructed to demand these rights, and not be content until they realize that their interests are properly protected, if not by being represented by agriculturists, by those, at least, who will consent to respect their interests.

In reference to these inducements offered to stimulate manufacturers, I feel that protection to all classes should be like other blessings of a free government, falling alike on all, like the dews of heaven, agriculturists receiving equal protection with manufacturers, and no discriminations made in favor of one and against the other, because what is the interest of the one is the interest of the other. The wool grower, for instance, cannot be prosperous unless the manufacturer is equally prosperous.

Col. Jones. I think if we understand the word protection according to the meaning doubtless intended by Mr. McClung, we will all agree after all. Friend McClung made a remark in reference to politicians which we all indorse, that they can and must be made to regard our rights. When he used the word protection, he was speaking more particularly of protection to Ohio as against New England manufacturers. These representatives from all parts of the State never witnessed such a state of things as they did last year when wool fell. One cause of this is that the manufacturers of New England have the spindles and have the money, and they say to Ohio, "We will give you forty cents per pound for your wool," while they put their own price on their manufactures. The time was—and I hope it will be again—when Ohio had the privilege of making half the bargain.

The Convention then took a recess until two o'clock P. M.

AFTERNOON SESSION.

TWO O'CLOCK P. M.

FURTHER ACTION ON THE WHEAT QUESTION.

Mr. Welch, from the committee to whom was referred the resolution offered by Mr. Lang, reported the following as a substitute:

Resolved, That the State Board of Agriculture be requested to offer liberal premiums for the best and second best crops of wheat produced on any number of acres not less than five, grown in the State, to be awarded at the State Fair in 1870, competitors to furnish a full report of the mode of culture, quality and character of the soil, the kind of wheat grown and the expense of cultivation, with such other conditions as the Board may require, satisfactory proof as to the number of acres cultivated and number of bushels produced, to be made to the Board.

Mr. Welch, of Belmont. That simply fixes the number of acres at not less than five, leaving the amount of the premium to the discretion of the Board. They understand pretty well the feelings of this Convention on that subject, and no doubt a liberal reward will be offered, and the action of the Board be satisfactory.

Mr. G. S. Innis, of Franklin county. I like that report, all but one thing; that is, in requiring that the amount of ground sown be not less than five acres. The State Board is here bound to offer a pretty liberal premium, but in this way not more than one in ten can be a competitor for it. Therefore I move that that part be stricken out, and the Board be left entirely untrammeled as to the quantity of wheat, as well as the amount of the premium.

Mr. Welch, of Belmont. I am opposed to that amendment. If that is stricken out, it will be taken as an indication that it is the sense of this Convention that the premium should be offered for one acre or less. That is not the kind of premium we want to be given in Ohio. We want something that will be substantial. We may, by extraordinary means, produce a very large amount of wheat from one acre, but the expense may more than treble the amount received for the crop. If we were to go out of the country to import manures and fertilizers, and go to extra expense on one acre and produce fifty bushels of wheat, at a cost of $200, who is benefited by it? Nobody, because it is not practicable, and can not be adopted by the people of the State. We want something that can be adopted by farmers generally, without the expense of overrunning the profit. This fancy farming is of no account whatever. Any of us can get up a show by putting extra labor and expense on an acre. We want something that will meet the necessities of the case, and be of benefit to the State at large.

Mr. Innis. As to the matter of cost upon one acre, no one here supposes that the State Board of Agriculture could be induced to give a large premium where the cost of raising the wheat exceeded so much the worth of the wheat. If I wanted to raise five acres as an experiment, I would want to separate it, and try one kind of manure on one acre and another kind on another acre, and so on through the five. Let this be done, and let either one of these be brought in competition for the premium. Then the man with his two hundred dollars, for instance, could experiment on one acre, and his more wealthy neighbor with his thousand dollars could experiment on five, and you would not thus exclude the majority, who have not the means to expend on so large an amount. It is well known that putting on a large amount of manure will make the wheat run to straw and not head well. We want manure that is well rotted and will produce grain and not straw. I would like to see the experiment tried with different mineral as well as animal manures. I would like to see the Board left untrammeled in this matter.

The amendment was lost, and the resolution, as reported from the select committee, adopted.

DISCUSSION ON WOOLEN MANUFACTURES RENEWED.

The resolution in reference to offering a premium for the best manufacturing establishment of woolen goods was again taken up. The resolution and amendments were read.

Mr. Donnelly. Next to the great agricultural productions of the country are our manufactures, and they certainly should be encouraged. While I have the utmost confidence in the present State Board of Agriculture, and believe I will have in the one to come, yet I see no reason why this Convention shall not say about how much they shall offer. Looking over the premium list of the Agricultural Board for cattle, etc., and the great interests of mechanics and manufacturers, and you will find fifty dollars for the one, and but ten for the other. I do not find any fault with the premiums on cattle; they never got more than they deserved—perhaps not as much—but others, perhaps, less than they deserved. I think $500 is not too much to offer as a premium to encourage the manufacture of our own wool in our midst. Our domestic goods are the best manufactured goods to wear, and cheaper than any Eastern manufactures, and the time will, likely, come when we will look upon them as good enough for any of us, and when, perhaps, we will leave the Frenchman to wear his own broadcloth. I am in favor of saying to this Board that we will not be satisfied with this premium being less than $500.

Mr. Broadwell, of Mercer. The premiums to be offered on various articles amounts to a considerable sum, and the State Board is limited to the amount on their hands, and in their distribution of premiums must be governed by this. I think $500 for the purpose spoken of is entirely too much. I know manufacturers who would consider themselves well paid if they could simply get a diploma. Merely to get the first prize would be a sufficient reward.

Mr. Welch moved that the amount be fixed at $500. The motion was lost.

Mr. McPherson, of Greene, moved to refer the whole matter to the Agricultural Board. Adopted.

AGRICULTURAL COLLEGE.

On motion, the report of the Committee on Business was taken up. The first resolution in reference to the Agricultural and Mechanical College, was again read, and the discussion opened by Mr. McClung, who read from last year's report the action of the Society on this subject.

Col. Harris, of Cleveland. I think we are all agreed that there should be unity in the application of the agricultural fund. I know we are all agreed that the means should be expended on some building on some eligible site, accessible from all parts of the State, and that this is the only way in which it will not be wasted or misapplied. If we should take issue as individuals on this matter, it would probably be with regard to what was reiterated in 1867 in regard to the institution.

There never has been, it seems to me, in the minds of the State Board, and those who have been friends or enemies of this measure, a well-defined idea of what that college should consist. Several of the most active friends of the measure favor a university system—a system that will make this college equal to the best literary and classical institutions in the country. I have never been in sympathy with this idea. I believe it should be a practical and scientific institution. But so far as establishing an institution to teach the higher branches of mathematics and the classics, there is no necessity for it. This is already attended to in those institutions which are established in our State, and we need not multiply that class of institutions.

Again, the object should be to educate farmers' boys for their business, and not to educate them as professional men. It has been said we should make it just as good a college as any in the land. I grant it; but the objects should be different; to give them a practical knowledge to prepare them the better for their vocation. If the object be to educate them for the professions, that object can be better attained in existing institutions.

I should object to reaffirming what was said in 1867. It is not my object to go into detail, after what has been said in previous years. The matter has been thoroughly discussed, and has gone before the Legislature, and the Legislature is as little likely to agree as we are. I think the best means to attain the object is to strike for the object itself and attend to the details afterwards. Without a desire to interfere with the resolution of the committee, I will read a resolution which I have written as expressive of what I would like to have from this convention.

Col. Harris then read the following resolution:

Resolved, That we sympathize with the efforts of the Legislative committee on Agricultural College, and express the hope that the committee will locate the same in the most eligible site at their disposal at an early day, and the further hope that the State Legislature will ratify the action of their committee.

Mr. Stevens, of Hardin. I had supposed that it was the intention of Congress, and inferred from the language used in the act, that when the sons of farmers patronized that school they were to obtain as liberal an education as at other colleges, and that in order to carry out its provisions all the higher branches of science and the classics must necessarily be taught. We cannot pretend to know fully how to apply the sciences without understanding more fully the classics. I have no doubt in my mind that we fall short of the intention of the grantors, if we do not secure that kind of a college that will give to farmers' sons as good an education as those who are educated in other colleges for the different professions. I think this school should offer facilities for obtaining an education equal to any college in the United States. If there are those who patronize the college and do not see proper to pursue the classics and higher branches they need not do it. I thought this was a settled question. I see no reason why farmers should not receive as good an education, as high intellectual culture as those preparing for the professions. If they do not, how will they be able to compete with them in the halls of legislation? What preparation would they have when elected to the Congress of the United States to get up with dignity and defend the matters entrusted to them?

Mr. Hayes, of Wooster did not know that this college was designed only for an agricultural education; he believed it was also designed for instruction in the mechanical arts. He thought this should be kept in view in this Convention. True, the agricultural interests of the country were very great, and he would not say a word to the depreciation of that interest, but the importance of mechanical labor to the country, and the necessity of trained labor in this respect were very great and should not be overlooked. Mr. Hayes continued at some length to speak of the advantage of trained labor. A proper course of training of this kind would enable boys to command the wages of journeymen, and receive four, five or six dollars per day, instead of fifty or seventy-five cents per day, without working half as long as they now must before they can obtain journeyman's wages. He illustrated the truth of this statement by information received on such points in a visit to the machine shops of the Baltimore and Ohio Railroad. In Baltimore they have an institution designed simply to teach boys to draw the outlines of machinery, &c. That little thing had given that institution such favor with the American navy officers that they greatly prefer boys from that institution, because from this training in such drawing, they have a more correct understanding of machinery and the proper adjustment and working of the various parts.

Mr. McClung thought there could be no mistake as to the intent of the resolution. Its language plainly showed that it kept in view one interest as much as the other. He again read the resolution. Said he, in reference to the substitute, I would say this; the Legislature has appointed a committee to take this matter under consideration, to examine sites and take action to carry into practical operation the provisions of the grant. I think this Convention has done enough by saying that we re-affirm our convictions in reference to this matter. I do not think it proper for us to say any thing about the General Assembly, but leave them to carry out as they see fit the object we have in view. This proposition has been out in the cold until recently, and we feared it would be a failure. But we find communities now coming forward, saying we will give a hundred thousand dollars and give thus and so for the establishment of this college, receiving more liberal offers than we anticipated. This shows that there is a power in the land that says we shall have an Agricultural College.

Mr. Buell, of Washington. Farming has been my main business all my life. I cannot conceive that it is necessary in order to make a man a farmer or mechanic, to abridge or limit his education. If I understand the purpose and intention of an institution of this kind, it is to elevate the standard and character of our farmers and mechanics. If I had boys to send to an institution of this kind, and wanted them to become farmers or mechanics, I would not send them to it if they could not receive at that institution a scholastic education as good as could be got in any and every respect in any institution in the State or United States.

The vote being then taken on the substitute, it was lost, and the resolution offered by the Business committee adopted.

CANADIAN RECIPROCITY TREATY.

The second resolution of the Business committee, opposing the Canadian Reciprocity Treaty, was next taken up.

Mr. McClung referred to the exports from Canada to the United States, reading the statistics in reference to a number of the leading articles of export and import, showing a balance of $9,000,000 against the United States. The question is whether we should invite persons in Canada to come and compete with our agriculturists and mechanics, and strike down the interests we represent. For one, he was opposed to the wools of Canada competing with ours, duty free, and their wheat competing with ours, duty free. The farmers who have cultivated their lands in wheat for the past few years get so poorly paid for it that they are running behind, and if we invite these persons to bring in their wheat, duty free, it will drive that product out of the United States and give it to Canada, so in reference to the wool and other things, therefore it is a direct strike at the interests of the United States. If this reciprocity treaty is re-enacted it will greatly cripple the agricultural interests of this country, therefore we should oppose the re-enactment of the treaty.

The resolution was unanimously adopted.

THE CATTLE DISEASE.

The third resolution relating to the Texas fever among cattle, &c., was then considered.

Mr. McMillan. I was a delegate to the Illinois convention, which recommended resolutions to the Legislatures of the different States, asking for the passage of laws to protect us from this cattle disease in the future. You are probably aware of the questions which came up before that convention, and it is not necessary that I should refer to them in detail. There is, however, one item which I would refer to, as it has not met with the approbation of Ohio delegates as I understand it, and propably not with a majority of the convention. As you are aware, it was thought by some that these cattle should be admitted to the States during the winter season, but excluded from the first of March to the first of November. After the convention had closed its business for which it was legitimately called together, after most of us had left for home, those remaining passed the resolution declaring it as the sense of the convention that all Texas cattle wintered in the Northern States should be regarded as native cattle. I think such was not the desire of the convention. The object was simply to prevent the taking of these cattle into these States at such periods, as we in the Northern States desired. The matter of Texas cattle has grown to be of considerable importance to our country, and while we desire to encourage all our interests and not interfere with domestic manufactures or products, still, as to what is the effect of the introduction of these cattle among us is undecided, and for this reason some were in favor of excluding them altogether until it was ascertained. But it was the general opinion that they might be brought here during the winter months without doing any injury. I hope this Convention will re-affirm the action of that convention, except that we do not concur in the act of the convention so far as it declares Texas cattle wintered in the Northern States to be native cattle.

Mr. Messenger, of Marion county. I can not agree with my friend in reference to this matter. From all the testimony we could get, there never has been found a case when the cattle coming from Texas into the

Northern States during the winter, or when they were wintered here, that they communicated the disease. That seems to be the testimony of all men who have had experience in the matter. As it is necessary that we should have cheaper cattle, as we have not cattle enough, why exclude any portion of cattle that are healthy? After all that was said and done in regard to the subject, we could not arrive at a conclusion as to what caused the disease. Some thought it was tick—we had plenty of tick men there. They say when the cattle come from Texas they are loaded with ticks; when filled these resemble dog ticks; they reproduce about once in thirty days, as near as we could ascertain from the testimony, until cold weather. That is why the tick men claim that it is through them that the disease is communicated.

Mr. Stevens thought when we look at the interests of cattle breeders and cattle graziers, that the amendment is in place. Cattle may be brought here diseased and the disease not develop itself until warm weather. I think we should avoid every appearance of evil, and that the amendment ought to be adopted.

Mr. McMillan moved that this amendment be incorporated in the resolution.

Mr. McMillan did'nt wish to contradict the statement of Mr. Messenger, but thought, perhaps, there had been cases where the disease had been developed by cattle that had been wintered here. He thought we should guard against the danger. He was opposed to that construction of their action at the Springfield convention as it was passed by a small minority of the convention, after most of the delegates had started home. It was true, we should encourage that which would make beef cheaper to purchasers, the theory was quite plausible, but he thought to do it in this way there was danger of dealing out death.

Mr. Messenger thought if dealing out this beef was dealing out death, it was dealt out to many. He had a curiosity to try it and experienced no inconvenience from eating it. He thought this beef had been vended in Chicago, New York and other places to a much greater extent the past season than ever before, yet we had no proof that it had injured a single individual.

From the testimony before the commission he understood that cattle that had been wintered here had never been known to engender the disease to others. It is not known to Texas cattle until after they get on their way north. According to the testimony, Texas cattle do not give it to Texas cattle, but the Texas steer gives it to the native ones.

These cattle are taken from Texas, driven through the Red River country, and as they say, are driven forty miles a day, and then sent up the Mississippi, and for ten or fifteen days have but little to eat or drink, and receive the hardest usage, being thumped and hammered all the time, so that it is not to be wondered at that they should become diseased.

Illinois, in 1867, passed a law prohibiting the introduction of Texas cattle into that State—that law stands upon their statute books to-day; but there were ten Texas cattle brought into the State in 1868 where there was one brought in any year before. Why put a law upon the statute book of Illinois or Ohio that will not be obeyed?

Mr. McMillan stated that a Texas steer, which to all external appearances was perfectly healthy, was killed, and ulcers half as large as his hand were found all through its stomach, which had healed over. There were the evidences of disease. He supposed the most ardent advocate of Texas cattle did not order a piece of that beef. He thought, until this whole matter was thoroughly investigated, we should not run the risk of having the disease communicated from these cattle. We owe it to ourselves, and to those who are looking to us, to recommend stringent regulations to protect ourselves from this disease.

Mr. J. O. B. Renick, of Franklin. I would ask if any one knows of a case where a Texas steer was wintered in Ohio, Illinois or Indiana, or was brought in in the winter time, and communicated the disease to other cattle?

Mr. McMillan. There was a case reported where some Texas cattle were wintered on some land which was rented to other parties, who turned cows on it the following spring, which took the disease and died.

Mr. Renick. What time did these cattle come there?

Mr. McMillan. I think they came there during the summer, and were kept there during the following winter.

Mr. Renick. How long after the Texas cattle came up, was it until the native cattle took the disease?

Mr. McMillan. It was a long time; as near as I could learn it must have been some twenty weeks or more.

Mr. Renick. Is there any difference between the ordinary murrain and the Texas cattle disease?

Mr. McMillan. These cattle present a different appearance from any I have seen affected with murrain. Of course they have some of the indications of murrain. It is an undisputed fact, however, that this disease is communicated from Texas cattle, and I see no use trying to prove it. The fact that it exists is sufficient.

The amendment was not agreed to. The original resolution was adopted.

HORSE RACING AT COUNTY FAIRS.

The fourth resolution, relating to the management of county agricultural societies, was briefly discussed.

Mr. Donnelly. I would like to know how the societies conduct them on any other grounds?

Mr. Chamberlain, of Cuyahoga. I think in many places horse racing and such things are carried to an extent which is not essential in conducting agricultural societies. My object in introducing the resolution was to have the Board recommend them to conduct their societies upon a purely agricultural and mechanical basis; to have the State Board issue a letter of instructions to the county societies requesting or advising them to desist from such practices. It is evident that in the vicinity where I live, and I suppose it is the case in other localities, that this practice is gaining ground and proving injurious to the true interests of our annual fairs.

Col. Harris. We have had some trouble in our part of the country in regard to this matter of horse racing. Last year we determined in our county to give it a fair trial, and went into racing good and strong. Before that we gave it a sort of half-hearted support. It was said we did not go far enough or too far, so we concluded to go the whole length last year and found that it worked worse. For my part, I became thoroughly disgusted. Though I have no objection to seeing horses trot or run, yet I have seen that these races at agricultural fairs always work badly. There is always a class of men who engage in betting, and cause trouble.

On motion of Mr. Reese, of Franklin, the resolution was laid on the table.

DISTRIBUTION OF AGRICULTURAL REPORTS.

The last resolution of the committee relative to the distribution of the State Agricultural Reports was next considered.

Mr. J. O. B. Renick, of Franklin. It seems from that resolution that politics have been introduced into this matter. We never allow such things introduced into our society.

The President remarked that there had been complaints made that in some places the reports had not been properly distributed, very often falling into the hands of persons who cared but little about them. He explained the plan providing for their distribution at the present time.

Mr. Alexander had heard one gentleman say that they were put into the hands of the county auditor, who parceled them out to parties who had no interest in agriculture, but were used for political purposes and given to political friends. He thought that there was no member of the General Assembly, be he of what political party he may, who would not say such a proceeding was wrong, and was not accomplishing the object intended in the publication of these reports.

In his county the books were distributed at the time they hold their annual meeting. Their representatives had never objected to the manner in which they distributed them. They are friends of the agricultural society and of agriculturists generally. By the plan they had adopted in their county, a director, or some leading member of the society from each township, at the annual meeting, took the proportion of books to which his township was entitled, and distributed them to those whom he knew would appreciate them. Thus they were distributed throughout the county, and fell into the hands of those who would read them.

Mr. Lang said: You are all aware, I suppose, that a majority of the other House are agriculturists; if not practical agriculturists, they are friends to the agriculturist. If they are neither, they have no business to be either there or here. I start out, then, with the premise that every member of the Senate or House is either an agriculturist or a friend to the agriculturist. I distributed, for five or six years, the agricultural reports in my Senatorial district, and I never asked a man's politics when I gave him a book. All I wanted to know was that he had brain enough to estimate its value. And, by the way, I say with pride, that there is no agricultural report published in the United States, not even by the Agricultural Department of the United States Government, that will compare with the Ohio Agricultural Reports. I think it is a book of great value, and should be put into the hands of practical farmers, men who will read them, or who have children to read them, regardless of politics. If there is a complaint that they are distributed for partisan purposes, let Democrats distribute them to Republicans, and *vice versa.* If they have not been distributed as they should have been in some places, this is a local matter and can be settled by the local societies. Let them settle the question between themselves and their representatives. I think the resolution should not pass, and am inclined to vote against it.

Mr. Welch, of Richland, thought the reports should be distributed by the secretary of the society, by giving a portion of them to the different members of the society, and distributing the balance according to his best judgment and discretion.

Mr. Ross said he happened to occupy an office which had been occupied by a member of the State Legislature from his county in 1861–2, and there were in the room perhaps thirty-five copies of the Agricultural Reports that had never been distributed.

Mr. Alexander did not wish to censure the Legislature, but he thought it quite likely that in other counties the same thing has happened to which his friend Ross referred.

Mr. McMillan thought the adoption of the resolution in its present form would be censuring the Legislature. He would dislike to vote for any such a thing, and moved to strike out that portion of the resolution referring to the distribution of the reports by partisans and for partisan purposes.

The motion was carried.

Col. Steadman, of Portage, thought the adoption of the resolution, taking away this privilege from the Legislature, would imperil the publication of the reports; their publication was now secured by a very close vote. There were difficulties connected with the distribution by any methods that might be adopted.

A motion to lay the resolution on the table was lost.

Mr. Welch, of Richland, thought the matter considerably mixed up. The present form of the resolution asserts "that the distribution of the reports were detrimental to our agricultural interests." (Laughter.)

Mr. McMillan explained that he supposed the resolution would be properly worded after striking out the words he had proposed.

Mr. Alexander moved that all of the resolution be striken out, except the latter clause, recommending the distribution of the reports through the officers of county agricultural societies.

Mr. J. W. Robinson, of Union county. This is no new question. It has been discussed from year to year. I think, when rightly understood, the present law is the best that can be adopted. If the distribution was made by county agricultural societies, independent societies would find fault. All the people pay their share of taxes used for the purpose of publishing the reports, and are all interested, and the Legislature represents the interests of the people. If the agricultural societies can not see that the books are rightly distributed after they are put in the hands of the auditor, it is a remarkable circumstance. I think it is a great fuss about a small matter, and move that the whole subject be indefinitely postponed.

The Secretary, Mr. Klippart, read a telegram from the Indiana State Agricultural Convention, in session at the same time, announcing that the seventeenth Indiana State Fair would be held from September 27 to October 2, 1869, and inquiring when Ohio would hold her's.

Mr. Welch, of Richland, offered a resolution requesting the Ohio State Board of Agriculture to memorialize Congress to take the duty off of whisky, and made a spirited and humorous speech upon it, when the resolution was voted down.

NORTON S. TOWNSHEND.

Col. S. D. Harris offered the following:

WHEREAS, Hon. Norton S. Townshend, a member of the Ohio State Board of Agriculture, has removed from the State; therefore,

Resolved, That the membership in said State Board, of the said N. S. Townshend, is hereby declared vacant, and that the same be filled by election at this meeting.

Mr. Lang. I think this would not be proper; he has not sent in his resignation; I understand he has moved away to take charge of a college but will return in March.

Col. Harris. I think I know more about this matter than many others. I offered the resolution, as friendly to Dr. Townshend.

The President remarked, that it was understood by the Board that if

Dr. Townshend desired to resign he would put his resignation in the hands of the State Board, which he had not done. There is a feeling on the part of a good many, (if we get an Agricultural College started,) in favor of getting him in that institution. With that hope, and with the facts and information before them, he would leave the Convention to act as they saw fit.

Mr. Klippart desired to say a word in regard to this matter, before the vote was taken. Said he, Dr. Townshend and myself have been intimate friends since 1854. We met in Chicago, in August last, both being members of the American Association for the advancement of science. He told me he was tendered a temporary professorship in the Iowa Agricultural College, and asked whether I thought it prudent for him to accept it. His oldest son thought it foolish in him to go out of Ohio. His wife thought it imprudent, also, for him to go to Iowa. When he learned that it was only temporary he made up his mind to go. Before he went he came down and stayed two days with me and talked the matter all over. He said he was not going to leave Ohio. I know that for the last eight years he has been anxious to sell his farm, thinking that it would be better for him to get a smaller farm. I think he advertised his Ohio farm in 1861 or 1862. He is a trustee of the Ohio Idiotic Asylum, an important institution of the State. He leaves Iowa to-morrow, and was very sorry that he could not arrive in time to be present at this meeting. He will attend the spring meeting of the Board, to fix the time of holding the next State Fair.

Mr. Turney. I would like to know what power we have to expel a member without charges against him.

On motion, the resolution was laid on the table.

The Convention then took a recess until 7½ P. M.

EVENING SESSION.

7½ O'CLOCK P. M.

NOMINATIONS AND ELECTION OF OFFICERS.

The first business of the evening session was the election of five members of the State Board of Agriculture. Messrs. Welsh, of Belmont, and Best, of Muskingum, were appointed tellers, and the delegates proceeded to vote on call by counties.

The following were the candidates named: J. Park Alexander, of Summit, James W. Ross, of Wood; John H. Evans, of Warren; D. McMillan, of Greene; J. O. B. Renick, of Franklin; J. M. Burt, of Coshocton; George Pow, of Mahoning; John Newton, of Washington; Thomas F. Joy, of Delaware; D. O. Richmond, of Erie; Everett Messenger, of Marion; James Buckingham, of Muskingum; R. P. Cannon, of Portage;

D. C. Morrow, of Williams; Ingraham Clark, of Harrison; James Stockdale, of Fairfield; and John H. Branch, of Clermont.

Mr. R. B. Donnelly declined a renomination, and thanked the Convention for the honor they had conferred upon him for the past four years. He hoped he would meet with them for many years to consult together concerning the highest calling in which men can engage.

Mr. Lang thought the gentleman had served with great honor and ability, and that his declining a renomination was out of order.

The vote on the first ballot stood: Alexander, 33; Ross, 31; Evans, 7; McMillan, 33; Renick, 27; Burt, 2; Pow, 2; Newton, 7; Joy, 8; Richmond, 26; Messenger, 18; Buckingham, 31; Cannon, 14; Morrow, 2; Clark, 9; Stockdale, 2; Branch, 17.

Necessary to a choice 31 votes.

Messrs. Alexander, Ross, McMillan and Buckingham were declared elected members of the State Board of Agriculture for two years.

The names of Messrs. Cannon, Morrow, Newton, Pow, Stockdale, Messenger and Clark were withdrawn. The Convention then proceeded to ballot for a fifth member of the Board, with the following result: D. C. Richmond, 29; J. O. B. Renick, 18; John H. Evans, 4; Newton, 1; Branch, 5. Mr. Richmond was declared elected a member of the State Board of Agriculture for two years.

A motion offered by Mr. Broadwell to reconsider the vote indefinitely postponing the resolution in regard to agricultural reports, was voted down.

In regard to the resolution declaring the place of Dr. Townshend, as member of the State Board, vacant, Col. Harris said he had offered it in good faith, supposing, as he still supposed, that the vacancy existed; but inasmuch as the impression prevails that it does not, he asked that the resolution might be taken up, that he could withdraw it. Carried, and the motion withdrawn.

On motion of Judge Lang, the thanks of the Convention were tendered to the Senate for the use of the Senate Chamber.

Convention adjourned *sine die.*

THE NINETEENTH ANNUAL STATE FAIR.

The Fair was located at Toledo for the years 1868 and 1869, in conformity with the ordinary usages of the Board; viz., that the city in or near which the Fair is held shall furnish a suitable tract of land free of charge, secure the usual railroad facilities of half fare for visitors and freight free, together with an annual bonus of $5,000.

In the judgment of many the location of the Fair at Toledo was a hazardous enterprize, but the Board was of opinion that if losses were to be incurred, that it was, financially, in a better condition to incur them *now*, than it was at any previous period in its history. The close of the Fair demonstrated that all the fears which were entertained that the Fair at this locality would prove a failure were entirely groundless, and that notwithstanding the recent growth of Toledo, that it offered to the exhibiter as many and as varied routes and means of access; and to the visitor as good accommodations as places boasting a greater number of years, and a much larger number of inhabitants.

The weather throughout the entire Fair was unfavorable rather than otherwise, although there was only one really uncomfortable and inclement day—Thursday. Unfavorable as was the weather, the receipts at Toledo, in the aggregate, were less than $2,000 less, than the greatest or largest receipts taken at any place where the Board held a Fair.

The Fair was a success, not only in a financial point of view—it is held that a Fair may be a financial success, and yet a complete failure, so far as the object to be attained by it is concerned—fortunately, the Fair at Toledo was more of a success considered as an exhibition of the industrial products of the State, than it was financially.

ENTRIES OF THOROUGHBRED HORSES.

1. Elliot Gray, Tecumseh, stallion, Morris, 5 years old.
2. Thomas Sullivan, Toledo, mare, 3 years old.
3. E. A. Smith, Cincinnati, stallion, Edgecomb, 5 years old.
4. John Reber, Lancaster, stallion, Regent, 1 year old.
5. " " sucking stud colt.
6. " " mare, Young Fashion, 10 years old.
7. " " " Columbia, 3 years old.
8. " " " Wauaneta, 2 "
9. " " sucking mare colt.
10. " " brood mare, with foal by side, Fashion.
11. " " " " " Lady Lancaster.

12. Blynn & Boyden, Stryker, filly, Ella Cheatham, 3 years old.
13. Mrs. J. W. Bishop, Lima, stallion, Tycoon, 9 years old.
14. Sol. J. Houck, Springfield, stallion, Cumberland, 6 years old.
15. A. J. Olds, Toledo, stallion, Star Gazer, 9 years old.

PREMIUMS AWARDED ON THOROUGHBREDS.

E. A. Smith, Cincinnati, best stallion four years old and over, Edgecombe........	$50
Sol. J. Houck, Springfield, second best stallion four years old and over, Cumberland.	25
John Reber, Lancaster, best stallion one year old and under two, Regent..........	15
" " best sucking stallion colt..................................	10
" " best mare three years old and under four, Columbia.......	20
Blynn & Boyden, Stryker, second best mare three years old and under four, Ellen Cheatham	15
John Reber, Lancaster, best mare two years old and under three, Wauanetta......	15
" " best sucking mare colt..................................	15
" " best brood mare with foal by her side, Fashion............	30
" " second best brood mare with foal by her side, Lancaster...	15

REPORT OF COMMITTEE.

The committee beg leave to report that they have awarded premiums in this class as inserted in margin. Though in several classes there was no competition, the animals exhibited were very fine, and, in the judgment of the committee, entirely worthy and well qualified.

W. F. Greer,
L. H. Lee,
H. Gram.

ENTRIES OF ROADSTERS.

1. A. P. Eggleston, Toledo, stallion, Crown Point, 5 years old.
2. W. W. Whitney, " mare, Topsey, 5 years old.
3. William B. Gregg, Elyria, stallion, Prince, 3 years old.
4. W. E. Livemore, Wauseon, bay mare, 5 years old.
5. C. E. Upton, Toledo, stallion, Hero, 3 years old.
6. Wm. Swailes, Troy, stallion, 1 year old.
7. " " " Monarch, 3 years old.
8. H. S. Hatch, Berea, stallion, Tom, 8 years old.
9. Wm. Swailes, Troy, stallion, Pony, 5 years old.
10. Birchfield & Bradley, Holland, stallion, Rock, 3 years old.
11. John Vanness, Ai, stallion, Charley, 4 years old.
12. Seth Griffin, Elyria, stallion, Hiram Woodruff, 5 years old.
13. O. J. Peck, Wellington, stallion, Erie Abdallan, 8 years old.
14. H. S. Compton, Rock Island, Ill., stallion, Kirkwood, 8 years old.
15. U. C. Cleveland, Toledo, filly, Kitty, 3 years old.
16. Wm. F. Champers, Toledo, Dolly, 2 years old.
17. Col. J. H. Wood, Adrian, Mich., bay stallion, Tornado, 9 years old.
18. " " Jack Shepard, 12 years old.
19. Isaac Sturtevant, Cleveland, Stranger, Jr., 7 years old.
20. E. H. Baxter, Delta, stallion, Green Mountain Boy, 9 years old.

PREMIUMS AWARDED ON ROADSTERS.

H. S. Compton, Rock Island, Ill., best stallion four years old and over, Kirkwood..	$50
Col. J. H. Wood, Adrian, Mich., second best stallion four years old and over, Tornado.	25
C. E. Upton, Toledo, best stallion three years old and under four, Henry	25
Wm. B. Gregg, Elyria, second best stallion three years old and under four, Prince..	15

Awarding Committee.—Sol. J. Houck, J. S. White, H. A. Boyd.

ENTRIES OF HORSES FOR GENERAL PURPOSES.

1. James Kelley, Fostoria, stallion, 1 year and under 2.
2. " " brood mare.
3. P. C. Lewis, Toledo, 4 year old mare.
4. " " 3 "
5. A. H. Hathaway, Toledo, mare, 3 years old.
6. F. Bissel, Toledo, mare, 2 years old.
7. " " stallion, 1 year old.
8. Isaac Kellogg, Hickory, stallion, 4 years and over.
9. Geo. W. Boos, Toledo, mare, Mollie, 4 years old.
10. W. V. Mackey, Lambertville, Mich., filly colt, 1 year old, Betty.
11. Wm. Swailes, Troy, stallion, Monarch, 6 years old.
12. " " mare, 4 years old.
13. " " " 3 "
14. Wm. Swailes, Troy, stud colt, 2 years old.
15. J. W. Keeney, Erie, Monroe county, Mich., mare colt, 2 years old.
17. P. T. Clark, Sylvania, mare, Floyd, 7 years old.
18. Peter Mickens, Lambertville, Mich., mare, Doll, 7 years old.
19. " " " Hat, 15 "
20. J. Birchfield, Holland, mare, Jule, 4 years old.
21. Stillman Brown, Toledo, mare, Nellie, 13 years old.
22. " " " Fan, 8 years old.
23. " " sucking colt, mare.
24. " " " "
25. " " mare and colt, Nellie.
26. " " " Fan.
27. E. H. Baxter, Delta, stallion, 8 years old.
28. Col. J. H. Wood, Adrian, stallion, Membrino Paymaster, 8 years old.
29. " " " Jack Shepard, 12 years.
30. " " " Tornado, 8 years.
31. Reuben Blanchard, Sylvania, O., stallion, Lincoln, 4 years.
32. Wm. Howard, Irwin Station, mare, Bridget, 3 years.
33. J. B. Read, " stallion, Bucephalus, 2 years.
34. Stephen Brown, Raga, Mich., " Colonel, 1 year.
35. Col. J. H. Wood, Adrian, " " Stranger, 7 years old.
36. Isaac N. Hathaway, Erie, Mich., filly, Beauty, 2 years.
37. Dr. Jacob Clark, Toledo, filly, Dolly, 2 years.
38. J. H. Parker, Sylvania, stallion, Mayduke, 7 years.
39. John Bailey, Millbury, " Charley, 1 year, 5 months.
40. John Van Houten, Toledo, filly, 2 years.
41. A. R. Hill, Wauseon, stallion, Prince, 6 years.
42. James Park, Fremont, sucking stallion colt.
43. " " mare, over 4 years.
44. " " brood mare, with foal by her side.
44. P. L. Coe & I. O. Baker, Milford Center, stallion, Monitor, 5 years.
45. J. Hobart, Whiteford Center, Mich., stallion, 1 year.
46. W. Harris, Marion, stallion, Young Hiatoga, 3 years.
47. Wm. F. Chambers, Toledo, Dolly, 2 years.
48. W. H. McPherson, Clyde, George, 9 years, stallion.
49. John S. Dalley, Bowling Green, stallion, Gov. Brough, 5 years.

50. George Dixon, Toledo, mare, Doll, and sucking colt at side, 9 years.
51. “ “ sucking stud colt.
52. E. Hamilton, Holland, brood mare, with foal by side.
53. “ “ sucking mare colt.
54. Ellis Demott, Maumee City, O., brood mare and colt by side.
55. “ “ sucking stud colt.
56. W. Williams, Columbus, stallion, 2 years.
57. D. H. Basset, Weston, Mike, stallion, 8 years.
58. Seth Griffin, Elyria, sucking stud colt.
59. George E. Brownell, Elyria, stallion, Star Hambletonian, 5 years.
60. Sizer & Willard, Kent, bay stallion, Barney Seacher, 6 years.
61. Thomas Rideout, East Toledo, sucking mare colt.
62. A. H. Baxter, Delta, stallion, Rebel Stranger, 10 years.
63. Andrew Somerton, Sylvania, stallion, Brick Pomeroy, 3 years.
64. Thos. Sullivan, Toledo, filly, 3 years.
65. J. J. Donohoe, Monroe, Mich., stallion, Black Hawk, 4 years.

PREMIUMS AWARDED ON HORSES FOR GENERAL PURPOSES.

Col. J. H. Wood, Adrian, Michigan, best stallion four years old and upwards, Membrino Paymaster	$50
Sizer & Willard, Kent, second best stallion four years old and upwards, Barney Searcher	25
W. H. Harris, Marion, best stallion three years old and under four, Young Hiatoga.	25
J. B. Reed, Irwin Station, second best stallion two years old and under three, Bucephalus	20
W. Williams, Columbus, second best stallion two years old and under three	10
James Kelley, Fostoria, best stallion one year old and under two	15
James Park, Fremont, best sucking stallion colt	10
Ellis Demott, Maumee City, second best sucking stallion colt	5
James Park, Fremont, best mare over four years old	30
P. T. Clark, Sylvania, second best mare over four years old, Floyd	20
W. Swailes, Troy, best mare three years old and under four	20
Wm. Howard, Irwin Station, second best mare three years old and under four, Bridget	15
J. W. McKenney, Erie, Monroe county, Michigan, best mare two years old and under three	15
Dr. Jacob Clark, Toledo, second best mare two years old and under three, Dolly...	10

Awarding Committee.—Josiah Koller, H. Gram, E. M. Bennet, Robert Read.

ENTRIES OF DRAFT HORSES.

1. E. Bristol, Lambertville, Mich., mare and colt, 4 years and over, Doll.
2. “ “ “ filly, 1 year and under 2, Maggie.
3. Wm. Swailes, Troy, stud colt, 1 year.
4. Thos. Jones, Darby Creek, stallion, 18 years.
5. “ “ mare, 3 years.
6. “ “ sucking mare colt.
7. “ “ brood mare with foal by her side.
8. Mrs. Mary Weaver, Rosedale, 1 sucking stud colt.
9. “ “ 1 brood mare with foal by her side.
10. Jacob Raulin, Darby Creek, stallion, 2 years.
11. James Kile, “ “ 1 year.

12. John Weaver, Marysville, stallion, 2 years, Bill.
13. Charles McMullen, Irwin Station, mare, Fan, 7 years.
14. “ “ “ Kit, 7 “
15. “ “ stud colt, Gen. Sherman, 1 year.
16. “ “ brood mare with foal at foot.
17. Geo. Sinclair, Milford Centre, Pete, stallion, 1 and under 2.
18. “ “ mare, 4 and over, Doll.
19. “ “ “ Stub, 3 and under 4.
20. “ “ “ Lady Gabriel, 3 and under 4.
21. Wm. Howard, Irwin Station, stallion, Gen. Grant, 2 years.
22. J. H. Gillespie, “ “ Clydesdale, 3 “
23. Alex. H. Thompson, “ “ Oxfordshire Champion, 7 years.
24. Marion County Imp. Co., Marion, stallion, Napoleon 1st, 6 years.
25. “ “ “ “ Duke of Normandy, 4 years.
26. “ “ “ “ Prince Imperial, 3 years.
27. B. Beditt, Eaton Rabbit, Mich., “ Honest Tom, 8 years.
28. Stephen Spooner, Darby Creek, “ Norman, 2 years.
29. Henry Stonehouse, Bayfield, C. W., “ Highland Chief, 7 years.
30. Geo. Surbeck, Java, mare, Lady Rose, 8 years.
31. W. W. Gardner, East Toledo, stallion, Bill, 7 years.

PREMIUMS AWARDED ON DRAFT HORSES.

Marion County Importing Company, Marion, best stallion 4 years old and over, Duke of Normandy	$50
Henry Stonehouse, Bayfield, C. W., 2d best stallion, 4 years old and over, Highland Chief	25
Marion County Importing Company, Marion, best stallion, 3 years old and under 4, Prince Imperial	25
J. H. Gillespie, Irwin Station, 2d best stallion, 3 years old and under 4, Clydesdale,	15
John Weaver, Marysville, best stallion, 2 years old and under 3, Bill	15
Jacob Raulin, Darby Creek, 2d best stallion, 2 years old and under 3	10
Chas. McMullan, Irwin Station, best stud colt, 1 year old and under 2, John Sherman	10
Geo. Sinclair, Milford Centre, 2d best stud colt, 1 year old and under 2, Pete	5
Mrs. Mary Weaver, Rosedale, best sucking stallion colt	10
Chas. McMullan, Irwin Station, best mare over 4 years old, Fan	30
Geo. Sinclair, Milford Centre, 2d best mare over 4 years old, Doll	20
“ “ best mare, 3 years old and under 4, Lady Gabriel	20
“ “ 2d best “ “ “ Stub	15
E. Bristol, Lambertville, Mich., best filly, 1 year old and under 2, Maggie	10
Thos. Jones, Darby Creek, best sucking mare colt	10
“ “ best brood mare with foal by her side	20
Mrs. Mary Weaver, Rosedale, 2d best brood mare with colt by her side	15

AWARDING COMMITTEE.—John Reber, H. M. Reed, Jas. Hamilton.

ENTRIES OF MATCHED HORSES AND MARES.

1. C. Cone, Toledo, 1 pair matched draft horses (gelding).
2. Geo. H. Berry, Toledo, mare “ Kitty,” 8 years (saddle).
3. Levi S. Wells, Fostoria, pair matched carriage horses (road).
4. “ “ single harness, mares.
5. P. C. Lewis, Toledo, pair roadsters, mares.

6. J. J. Robinson, Wauseon, gelding "Wm. Tell," 5 years (light harness).
7. J. H. Stevens, Toledo, mare "Kitty," 9 years (light harness).
8. C. B. Phillips, " gelding "John," 4 years (light harness).
9. " " gelding "Charley," 5 years (light harness).
10. B. W. Rigby, " mare "Black Fly," 8 years " "
11. S. Bristol, Lambertsville, Mich., pair farm or draft geldings.
12. E. Gardiner, Sylvania, pair farm or draft geldings.
13. James Furney, Toledo, black mare "Normer," 6 years (light harness).
14. Jas. Calhoun, " bay mare "Irene," 6 years, " "
15. L. B. Gifford, " gelding "Billy," 7 years (saddle).
16. D. Van Houten, " mare "Pet," 5 years, "
17. G. W. Davis, " pair matched roadsters, 7 and 8 years.
18. A. E. Shropshire, Paris, Ky., gelding saddle-horse "White Rose," 5 years.
19. P. T. Clark, Sylvania, pair matched roadsters, 6 years.
20. " " mare, 6 years (light harness).
21. B. F. Phillips, Lyons, mare "Lady of the Woods," 7 years (light harness).
22. " " gelding, "Buckeye Boy," 5 years " "
23. H. A. Boyd, Toledo, pair matched roadsters, 9 years.
24. T. P. Brown, " mare "Flora," 5 years (light harness).
25. Col. J. H. Wood, Adrian, Mich., gelding "Phil. Sheridan," 10 years (light harness).
26. Charles McMullen, Irwin Station, pr. matched draft horses, "Fan" and "Kit," 7 yrs.
27. Geo. Sinclair, Milford Center, saddle mare "Nellie."
28. L. R. Smith, Toledo, "Black Joe," 5 years (light harness).
29. Geo. Sinclair, Milford Center, matched draft mares "Doll" and "Stub."
30. V. H. Ketchum, Toledo, pair roadsters.
31. C. Cone, " "Grant," 5 years (light harness geld.)
32. Wm. B. Thorne, " "Grant," 6 years, " "
33. Moses Clements, " "Ned," 5 years, " "
34. W. C. Cleveland, " "Catherina," 3 years (light harness mare).
35. J. H. Parker, Sylvania, pair coach horses.
36. Adam Meissner, Manhattan, pair matched roadsters, 3 years.
37. Chas. A. King, Toledo, pair roadsters, "Charley" and "Frank," 6 yrs. (blk. gelds.)
38. Geo. Hurdick, Fremont, pair matched roadsters.
39. " " gelding for light harness.
40. " " mare for light harness.
41. J. A. Granger, Toledo, mare for light harness, "Black Bess," 9 years.
42. Orlando Gay, Lasalle, Mich., pair roadsters, 6 years.
43. N. A. Eggleston, Toledo, "Nightingale," 4 years (saddle geld.)
44. I. H. Taft, White House, pair roadsters, 6 years.
45. I. E. Wilcox, Maumee City, gelding "Wild Frank," light harness, 7 years.
46. E. Gray, Tecumseh, Mich., gelding "Reb," saddle, 6 years.
47. Wm. Williams, Columbus, pair roadsters.
48. " " light harness gelding.
49. " " " " "
50. Richard Mott, Toledo, pair roadsters, 8 and 12 years.
51. Miss Tempie Reed, Toledo, "Whip," geld., saddle, 8 years.
52. A. L. Dewey, Put-in-Bay, pair roadsters.
53. " " saddle geld., 3 years.
54. Benj. F. Linn, Fremont, pair draft horses, "Jim" and "Charley."
55. Harry Wickert, " geld. "Mack", light harness, 6 years.
56. Morris Knapp, Jackson, Mich, pair roadsters, "Dick" and "Morris," 7 years.
57. Mrs P. E. Cady, Toledo, gelding "Dandy," light harness, 11 years.

58. Geo. E. Brownell, Elyria, mare "Belle," 9 years (light harness).
59. J. Welch, Canandaigua, Mich., mare "Mollic," 7 years (light harness).
60. " " " mare "Lady Jackson," 8 years.
61. " " " pr. roadsters, "Lady Jackson" and mate, 7 and 8 yrs.
62. E. D. Pearson, Detroit, Mich., pair roadsters, "Pet" and "Bell," 7 and 8 years.
63. Henry Zipple, Petersburg, Mich., pair roadsters, 3 years.
64. G. H Beucham, Clinton, " " " 5 and 7 years.
65. C. L. Blanchard, Morenci, " " " 7 years.
66. " " " light harness mare, 7 years.
67. B. F. Phillips, Lyons, pair roadsters, 5 and 7 years.
68. H. W. Brown, Cleveland, "Frank," 5 years (light harness geld.)
69. S. S. Lofland, Plymouth, "Cherry Bell," 7 years (saddle mare).
70. J. U. Bennett, Orlan, Ind., "Morgan," 5 years (light harness geld.)
71. " " " "Dick," 6 years " " "
72. Peter Lenk, Toledo, pair draft geldings.
73. " " gelding "Frank" (light harness).
74. E. Driggs, Rome Centre, Mich., pair roadsters, "General" and "Luther," 7 years.
75. " " " "General," 7 years (saddle geld.)
76. C. L. Blanchard, Morenci, Mich., pair coach horses.
77. James Park, Perrysburg, saddle gelding, 5 years.
78. P. J. Latshaw, Toledo, pair roadsters.

PREMIUMS AWARDED ON MATCHED HORSES AND MARES.

Richard Mott, Toledo, best pair of coach horses	$30
C. L. Blanchard, Morenci, Mich., second best pair of coach horses	15
C. Cone, Toledo, best pair of farm or draft geldings or mares	30
Geo. Sinclair, Milford Center, second best pair of draft geldings or mares	15
H. A. Boyd, Toledo, best pair of matched roadsters	30
G. W. Davis, Toledo, second best pair of matched roadsters	15

PREMIUMS AWARDED ON GELDINGS AND MARES FOR HARNESS, SADDLES, ETC.

Harry Wickart, Fremont, best gelding for light harness	$50
J. J. Robinson, Wauseon, second best gelding for light harness	25
Geo. E. Brownell, Elyria, best mare for light harness	50
J. Welch, Canandaigua, Mich., second best mare for light harness	25
A. C. Shropshire, Paris, Ky., best horse or gelding for saddle	25
Miss Tempie Reed, second best horse or gelding for saddle	10
Geo. Sinclair, Milford Center, best mare for saddle	25

ENTRIES OF TROTTERS.

1. Robt. Smith, Whiteford, Ohio, mare, Lady Gipsey, 6 years old.
2. A. H. Hathaway, Toledo, gelding, Ben Butler, 5 years old.
3. L Bissel, Toledo, stallion, Jackson, Jr., 8 years old.
4. Thos. Conway, Toledo, gelding, Charley, 9 years old.
5. D. O. Livemore, Wauseon, mare, Nellie, 9 years old.
7. Trowbridge Bros., Wauseon, mare, Flora, 9 years old.
8. R. J. Wheeler, Toledo, brown mare, Kate, 5 years old.
9. W. Colburn, " bay gelding, Cunninger, 6 years old.
10. Col. J. H. Wood, Adrian, Mich., Membrino Paymaster, 8 years, trot.
11. " " " Jack Shepard, 12 years, trot.
12. " " " Tornado, 8 years, trot.

13. L. R. Smith, Toledo, Black Joe, trotting gelding, 5 years.
14. " " Black Joe, trotting gelding, 5 years.
15. Col. J. H. Wood, Adrian, Mich., Stranger, 7 years, trotting stallion.
16. Isaac N. Hathaway, Erie, Mich., Tom Thumb, 23 years, trotting gelding.
17. Moses Clement, Toledo, Ned, 5 years, trotting gelding.
18. A. E. Tinker, East Toledo, Billy, 5 years, trotting gelding.
19. H. S. Hutch, Berea, Tom, 8 years, trotting stallion.
20. Henry Zibler, Petersburgh, Mich, stallion, Kit Carson, 9 years, trotting stallion.
21. L. L. Tod, Morenci, Mich., mare, 7 years, Morenci Bell, trotting.
22. W. J. Dill, Sandusky, mare, Kitty, 8 years old.
23. James Furney, Toledo, Jack Hinton, 6 years, trotting gelding.
24. E. Driggs, Rome Center, Mich., gelding, Gen. Grant, 8 years.

TROTTERS.

H. S. Hatch, Berea, best and fastest trotting stallion, Tom	$100
R. J. Wheeler, Toledo, best and fastest trotting mare, Brown Kate	100

REPORT OF COMMITTEE.

The undersigned committee upon class six (6) beg leave to report they awar premium to stallion "Tom," entered by H. S. Hatch, Berea; to brown mare "Kitty," entered by R. J. Wheeler, Toledo.

In the class of geldings, five horses started. Protests were entered, by different parties, against all of the animals. Black horse, "Billy," entered by A. E. Tinker, it is questionable whether he is worthy of a premium. It was stated by gentlemen living in Toledo, that there was no doubt that all of the horses, with the exception noted, had "trotted for money." In consequence of this, we gave no premium, but leave the matter open for the decision of the Board. Horses were placed in the heats: Jack Hinton, 1 1; Tom Thumb, 2 2 (time 3.15, 3.15); Gen. Grant, 3 3; Charley, 4 4; Billy, 5 5

W. F. Greer, *Chairman.*

ENTRIES IN SWEEPSTAKES.

1. A. P. Eggleston, Toledo, stallion, Crown Point, 5 years.
2. Elliott Gray, Tecumseh, Mich., stallion, Morris, 5 years.
3. J. J. Robinson, Wauseon, gelding, Wm. Tell, 5 years.
4. D. O. Livemore, " mare, Nellie, 9 years.
5. William Swailes, Troy, horse and five colts.
6. James Furney, Toledo, black mare, Normer, 6 years, sweepstakes.
7. " " bay, Florence, 8 years, sweepstakes time.
8. William Swailes, Troy, stallion, sire of five colts.
9. Reber & Smith, Lancaster, Imported Bonnie Scotland, 15 years.
10. John Reber, " yearling colt, Regent.
11. " " mare, Young Fashion, 10 years.
12. " " " Columbia, 3 years.
13. L. R. Smith, Toledo, Jim, 8 years, trotting gelding, sweepstakes.
14. Geo. Sinclair, Milford Center, mare, Doll, sweepstakes mare.
15. " " " Stub, " "
16. " " " Nellie, " "
18. Col. J. H. Wood, Adrian, Mich., Membrino Paymaster, 8 years.
19. " " " Stranger, 7 years, trot, sweep.
20. " " " Membrino Paymaster, 8 years, sweepstakes, trotter.
21. " " " Jack Shepard, 12 years, " ".
22. " " " Tornado, 8 years, " "
23. Marion County Imp. Co., Marion, Napoleon I., 6 years, sweepstakes.
24. " " " Duke of Normandy, 4 years, sweepstakes.

25. William Swailes, Troy, Monarch, 6 years.
26. H. S. Compton, Rock Island, Ill., stallion, Kirkwood, 8 years, sweepstakes, trotter.
27. " " " " 8 " any age or breed.
28. O. J. Peck, Wellington, stallion, Erie Abdallah, 8 years.
29. Geo. E. Brownell, Elyria, stallion, Star Humbletonian, 5 years.
30. " " mare, Belle, 9 years.
31. Henry Stonehouse, Bayfield, stallion, Highland Chief, 7 years.
32. Mrs. J. W. Bishop, Lima, stallion, Tycoon, 9 years.
33. Sizer & Williard, Kent, stallion, Bamay Searcher, 6 years.
34. J. Welch, Canandaigua, Mich., mare, Lady Jackson, 8 years.
35. Isaac Sturtivant, Cleveland, stallion, Stranger, 7 years.
36. C. L. Blanchard, Morenci, Mich., mare, Kit, 7 years.
37. L. L. Tod, Morenci, Mich., mare, Morenci Bell, 7 years.
38. Seth Griffin, Elyria, stallion, Hiram Woodruff, 5 years.
39. H. W. Brown, Cleveland. gelding, Dick Hilliard, 15 years, trotting.
40. W. J. Dill, Sandusky, mare, Kity, 8 years, trotter, sweepstakes.
41. Thos. Jones, Darby Creek, stallion, sire and five colts.
42. " " five colts by one horse.

PREMIUMS AWARDED—SWEEPSTAKES.

H. S. Crompton, Rock Island, Ill., best and fastest trotting horse, mare or gelding, Kirkwood	$200
Reber & Smith, Lancaster, best stallion of any age or breed, Bonnie Scotland	100
John Reber, Lancaster, best mare of any age or breed, Columbia	100

Thos. Jones, Darby Creek, best five colts, not less than one year old, sired by any one horse, and the sire to be exhibited with his colts—style, size and action to be specifically considered—$50.

Thos. Jones, Darby Creek, to the sire of the best five colts as above specified, silver medal.

REPORT OF COMMITTEE.

The committee beg leave to report that they award premiums as noted in the margin. The display of horses in this class was very fine, and competition in most instances very close, though your committee were unanimous in their decision in every instance.

AWARDING COMMITTEE—Wm. F. Greer, —— Cammit, H. Gram, L. H. Lee.

ENTRIES OF JACKS AND MULES.

1. Edward Kellogg, Nevada, jack, Jack Downing, 4 years.
2. Stillman Brown, Toledo, pair mules, 8 years.
3. Wm. B. Perkins, Durbin's Corners, Williams county, Spanish jack, 2 years.
4. L. Cleggitt, Xenia, black jack, Bill Fisher, 4 years old.
5. " " jenny, Martha, and colt, 7 years old.
6. " " jennet, Betty, 2 years old.
7. " " mule colt.
8. E. P. Kellogg, Nevada, jack, James Buchanan, 12 years.
9. Wm. Howard, Irwin Station, jack, Black Warrior, 5 years.
10. E. P. Kellogg, Nevada, jack, Jack Robinson, 2 years.
11. Isaac Powell, Clarksfield, jack, Champion, 3 years.
12. " " jennet, Flora, 5 years.
13. Isaac Powell, " " Kate, 9 years.
14. " " pair mules, 5 years.
15. " " mule, Jane, 5 years.
16. Stillman Brown, Toledo, mule, 8 years.
17. " " " "

PREMIUMS AWARDED ON JACKS AND MULES.

L. Cleggett, Xenia, best jack three years old and over	$40
Isaac Powell, Clarksfield, second best jack three years old and over	20
W. B. Perkins, Durbin's Corners, Williams county, best jack two years old and under three	25
E. P. Kellogg, Nevada, second best jack two years old and under three	10
Isaac Powell, Clarksfield, best jennet three years old and over	15
L. Cleggett, Xenia, second best jennet three years old and over	10
" " best jennet two years old and under three	10
Isaac Powell, Clarksfield, best pair of mules three years old and over	25
" " best mules two years old and over	15
L. Cleggett, Xenia, best mule colt	10

AWARDING COMMITTEE.—Josiah Koller, S. S. Ketcham, Chas. McMullen.

ENTRIES OF SHORTHORN CATTLE.

1. John Borton, West Unity, bull, Leo, 2 years and under 3.
2. Edward Burt, East Toledo, bull, Gen. Sheridan, 18 months old.
3. R. Baker, South Amherst, bull, Gen. Sherman, 4 years.
4. " " bull, Colfax, 1 year 4 months.
5. " " cow, Moss Rose, 2 years.
6. " " heifer calf, Kentucky Rose, 6 months.
7. Noah A. Whitney, Toledo, bull calf, 5 months 10 days, (grade.)
8. Jacob Hiscock, New Bedford, Mich., bull, 3 years.
9. A. C. Shropshire, Leesburg, Ky., bull, Flying Cloud, 2 years.
10. " " bull, Duke of Bourbon, 1 year.
11. " " cow, Nannie Brock, 8 years.
12. " " cow, Annie Fisk, 6 years.
13. " " heifer, Red Bud, 2 years.
14. " " calf heifer, Bessie, 3 months.
15. D. McMillan, Jr., Xenia, bull, Plantagenet, 3 years 1 month, red.
16. " " bull, Loyal Duke of Oakland, 2 years 1 month, red.
17. " " bull, Oakland Lad, 9 months, red.
18. " " bull, Oakland Lad 2d, 9 months, red.
19. " " bull, Royal Oakland, 6 months, red.
20. " " cow, Zenobia, 9 years, red.
21. " " cow, Louan 23d, 5 years, roan.
22. " " cow, Mignionette, 4 years, red.
23. " " cow, Louan 35th, 3 years, red.
24. " " heifer, Winona, 2 years, red.
25. " " heifer, Pride of the Valley, 1 year, red.
26. " " heifer, Frederika, 1 year, red and white.
27. " " heifer calf, 6th Duchess of Oakland, 9 mos., red and white.
28. " " heifer calf, 7th Duchess of Oakland, 6 months, red.
29. " " heifer calf, Louan of Oakland 2d, 5 months.
30. " " breeding cow with calf at foot, D. of Oakland, 7 years.
31. " " " " " Mignionette, 4 years.
32. " " " " " Louan 35th, 3 years.
33. R. P. Boody, Wauseon, " " " 6 years.
34. " " heifer, 1 year and under 2.
35. " " bull calf, 4 months.
36. R. Baker, Amherst, heifer, Snow Flake, 2 years.
37. John Montgomery, Granville, bull, Duncan Airdrie, 4 years.

38. John Montgomery, Granville, bull, Lord Luthan, 1 year.
39. Hills and Jones, Delaware, bull, Baron, 2 years old.
40. " " bull, Cambrain Prince, 1 year old
41. " " bull calf, Mark Twain.
42. " " bull calf, Imperial Starlight.
43. " " cow, Mary Gray, 6 years old.
44. " " cow, Sharon Rose, 2 years old.
45. " " cow, Red Duchess, 2 years old.
46. " " heifer, Bonny Rose, 1 year old.
47. " " calf, Bonnie Belle.
48. " " cow, Bonny Lass, with calf at foot.
49. Jonathan Donalds, Springfield, bull, Dexter, 2 years and over.
50. Col. J. H. Wood, Adrian, Mich., bull, 2d Duke of Airdrie, 4 years.
51. " " cow, Zenobia, 6 years.
52. " " cow, Countess, 6 years.
53. " " bull calf, Duke of Arles, 6 months.
54. Samuel Brown, Weston, Wood county, bull, Champion, 1 year old.
55. Adam Meissiner, Manhattan, bull, Match, 2 years 3 months.
56. A. C. Shropshire, Paris, Ky., cow and calf at foot, Red Bud, 2 yrs., Venie, 3 months.
57. George Wagoner, Fremont, bull, Duke, 4 years.
58. David Selsor, London, bull, Duke of Madison, 1 year.
59. " " cow, Louan 39th, 3 years.
60. " " cow, Clementine, 2 years.
61. " " cow, Flora Temple, 2 years.
62. " " heifer, Louan 46th, 1 year.
63. " " heifer, Louan 15th, 1 year.
64. " " heifer calf, Louan 17th.
65. " " cow and calf at foot, Louan 12th.
66. " " cow, Louan 12th, 9 years.
67. " " cow, Sallie Bell, 10 years.
68. A. C. Shropshire, Leesburg, Ky., bull, Norfolk, 2 years.

PREMIUMS AWARDED ON SHORT-HORNS.

Daniel McMillan, Xenia, best bull, three years old and upwards, Plantagenet	$75
John Montgomery, Granville, second best bull, three years old and upwards, Duncan Airdrie	50
Daniel McMillan, Xenia, best bull, two years old and under three, Loyal Duke of Oakland	40
A. C. Shropshire, Paris, Ky., second best bull, two years old and under three, Flying Cloud	25
David Selsor, London, best bull, one year old and under two, Duke of Oakland	30
A. C. Shropshire, Paris, Ky., second best bull, one year old and under two, Duke of Bourbon	20
Daniel McMillan, Xenia, best bull calf, Royal Oakland	15
Daniel McMillan, Xenia, second best bull calf, Oakland Lad 2d	10
Daniel McMillan, Xenia, best cow, four years old and over, Louan 23d	50
David Selsor, London, second best cow, four years old and over, Louan 12th	30
David Selsor, London, best cow, three years old and under four, Louan 39th	50
Daniel McMillan, Xenia, second best cow, three yrs. old and under four, Louan 35th,	30
David Selsor, London, best cow two years old and under three, Clementine	30
Daniel McMillan, Xenia, second best cow, two years old and under three, Winona	20
Daniel McMillan, Xenia, best heifer, one year old and under two, Pride of the Valley,	25
Daniel McMillan, Xenia, second best heifer, one year old and under two, Frederika,	15

A. C. Shropshire, Paris, Ky., best heifer calf, Venie	$15
Daniel McMillan, Xenia, second best heifer calf, Sixth Duchess of Oakland,	10
Daniel McMillan, Xenia, best breeding cow, with calf at foot, Mignionette	50
A. C. Shropshire, Paris, Ky., second best breeding cow, with calf at foot	30

WORK OXEN AND STEERS.

1. James Mickens, Toledo, yoke of work oxen, 5 years.
2. Fred. Bertholf, Sylvania, fat steer, 2 years.
3. V. H. Ketchum, Toledo, fat steer, 4 years.
4. John Van Houten, Toledo, yoke of work oxen, 7 years.
5. Wm. M. Yeazell, Springfield, heifer, fat, 4 years.
6. J. Chambers, Toledo, yoke of work oxen, 1 year.
7. Wm. Brown, Weston, Wood county, 1 fat steer, 5 year old.
8. Chas. A. Denman, East Toledo, yoke of work oxen, 7 and 8 years.
9. W. D. Page, Morenci, Mich., yoke of work oxen, 4 years.
10. W. D. Page, Morenci, Mich., 1 fat steer, 4 years.

PREMIUMS AWARDED ON WORK-OXEN AND STEERS.

John Van Houten, Toledo, best yoke of oxen, four years old and over	$40
Jas. Mickens, Toledo, second best yoke of oxen, four years old and over	20
J. Chambers, Toledo, best yearling yoke of oxen	10

PREMIUMS AWARDED ON FAT CATTLE.

Wm. Brown, Weston, best single bullock, four years old and over	40
W. D. Page, Morenci, Mich., second best single bullock, four years old and over	30
Wm. M. Yeazell, Springfield, best cow or heifer	25

AWARDING COMMITTEE.—H. J. Ayres, Calvin Dodge, J. L. Wood, David Selsor.

ENTRIES IN SWEEPSTAKES.

1. R. Baker, South Amherst, bull, Gen. Sherman.
2. “ “ heifer, Moss Rose.
3. “ “ bull, Colfax.
4. “ “ calf, Kentucky Rose.
5. “ “ heifer, Cow Slip.
6. “ “ heifer, Joan of Arc.
7. A. C. Shropshire, Paris, Ky., herd of one bull and three cows.
8. Hills & Jones, Delaware, herd of one bull and four cows.
9. “ “ herd of one bull and three cows
10. “ “ bull, Baron.
11. “ “ cow, Sharon Rose.
12. “ “ cow, Red Duchess.
13. Daniel McMillan, Xenia, bull, Plantagenet, 3 years, 1 month.
14. “ “ bull, Loyal Duke of Oakland, 2 years, 1 month.
15. “ “ cow, Zenaida, 9 years.
16. “ “ cow, Louan 21st, 6 years.
17. “ “ cow, Louan 23d, 5 years.
18. “ “ cow, Mignionette, 4 years.
19. “ “ heifer, Winona, 2 years.
20. “ “ bull, and five of his calves, (Plantagenet.)
21. Daniel McMillan, Xenia, herd of bull and four cows, (Plantagenet, Zenaida, Louan 21st, Louan 23d, Winona.)

22. Daniel McMillan, Xenia, herd of bull and three cows, owned and bred by exhibiter. (Bull Loyal Duke of Oakland, Duchess of Oakland, Mignionette, Winona)
23. Jonathan Donalds, Springfield, bull, Dexter, 2 years.
24. Col. J. H. Wood, Adrian, Mich., bull, 2d Duke of Airdrie, 4 years.
25. " " cow, Zenobia, 6 years.
26. " " bull, Duke of Arles, 6 months.
27. F. Simmons, Monroeville, bull, Mammoutte, 3 years, 7 weeks, (sweepstakes.)
28. A. Thorpe, Clyde, herd, bull and four cows and heifers, (George 2d, 2 years; Beauty, 4 years; Fancy, 4 years; Pretty, 3 years; Hatty, 2 years.)
29. A. Thorpe, Clyde, cow, Fancy, 4 years.
30. A. Thorpe, Clyde, herd bred and owned by exhibiter. (George 2d, 2 years; Beauty, 4 years; Pretty, 3 years; Hatty, 2 years.)
31. A. C. Shropshire, Paris, Ky., bull and four cows or heifers. (Flying Cloud, 2 years; Nannie Brock, 8 years; Hannah Fisk, 5 years; Red Bud, 2 years; Venie, 3 mos.
32. A. C. Shropshire, Paris, Ky., Duke of Bourbon, sweepstakes, 1 year.
33. David Selsor, London, bull and four cows, (Gen. Grant, Louan 13th, Louan 39th, Louan 12th, Clementine.)
34. David Selsor, London, bull, Gen. Grant, 4 years.
35. " " cow, Louan 13th, 6 years.
36. " " cow, Louan 12th, 9 years.
37. " " cow, Louan 39th, 3 years.
38. " " cow, Sallie Belle, 10 years.
39. " " cow, Clementine, 2 years.
40. David Selsor, London, bull and three cows, owned and bred, (Gen. Grant, Louan 13th, Sallie Belle, Clementine.)
41. Samuel Southard, Toledo, bull, Dime, 4 years.
42. John Montgomery, Granville, Duncan Airdrie, 4 years.
43. Thos. Bridgwater, Toledo, bull, Chas. A. King 2 months.
44. David Selsor, London, bull, Duke of Madison, 1 year.

PREMIUMS AWARDED ON SWEEPSTAKES ON CATTLE.

Daniel McMillan, Xenia, best herd of one bull and four cows or heifers, all to be of one breed and owned by exhibiter, Plantagenet	$200
David Selsor, London, second best herd of one bull and four cows or heifers, all to be of one breed and owned by exhibiter, Gen. Grant	100
Daniel McMillan, Xenia, best breeding bull, to be exhibited with five of his calves not less than six months old, and the bull, as to constitution, health and vigor, to exhibit good breeding condition, Plantagenet	100
Daniel McMillan, Xenia, best bull of any age or class, Loyal Duke of Oakland	100
Daniel McMillan, Xenia, best cow of any age or class, Louan 21st	50
Daniel McMillan, Xenia, best herd of one bull and three cows or heifers, Loyal Duke of Oakland, Duchess of Oakland, Winona, Mignionette	GOLD MEDAL.

AWARDING COMMITTEE.—Chas. M. Clark, D. M. Uhl, Calvin Dodge.

ENTRIES OF DAIRY STOCK.

1. R. Baker, South Amherst, cow, Nymph, 5 years.
2. " " " Rose, 5 "
3. " " " Althea, 3 "
4. " " " Belle of Lorraine, 3 years.
5. " " " Daisy, 2 years 10 months.

6. Noah A. Whitney, Toledo, cow, 4 years.
7. “ “ heifer, 2 years.
8. James Collins, East Toledo, cow, Betsey, 6 years.
9. H. Kellogg, Hickory, cow, under 4 years.
10. John Dan, East Toledo, Heifer, 2 years.
11. R. Garner, East Toledo, cow, 9 years.
12. D. McMillan, Jr., Xenia, cow, Duchess of Oakland, 7 years.
13. Thos. Bridgwater, Toledo, cow, Nellie, 7 years, milking.
14. Wm. Richards, Toledo, heifer, Fanny, 2 years.
16. F. Simmons, Monroeville, bull, Mammoth, 3 years 7 weeks.
17. A. Thorpe, Clyde, cow, Beauty, 4 years.
18. “ “ “ Pretty, 3 “
19. “ “ “ Hatty, 2 “
20. “ “ “ bull, 2 years and under 3, George 2d.
21. Samuel Southard, Toledo, bull, Dime, 4 years.
22. H. H. G. Smith, Toledo, milking cow, 4 years and over.
23. Wm. Richards, Toledo, milking cow, 6 years, Clarke.

PREMIUMS AWARDED ON DAIRY STOCK.

Noah A. Whitney, Toledo, best milking cow, four years old and over	$40
R. Baker, South Amherst, second best milking cow, four years old and over, Rose	20
R Baker, South Amherst, best milking cow, three years old and under four, Athea,	30
R. Baker, South Amherst, second best milking cow, three years old and under four, Belle of Lorain	15
R. Baker, South Amherst, best heifer, two years old	20
Wm. Richards, Toledo, second best heifer, two years old	10
F. Simmons, Monroeville, best dairy bull, three years old and over	30

AWARDING COMMITTEE.—Wm. L. Smith, H. T. Geddings, John Sears, J. T. Merriman, Edwin Tuttle.

NON-ENUMERATED ENTRIES.

1. H. Kellogg, Hickory, heifer calf, (no pedigree.)
2. S. E. Merry, Milan, 1 pair Brahma chickens.
3 “ “ “ white Leghorn chickens.
4. S. M. Read, Toledo, pair white mice.
5. Amalia Waundtka, Toledo, parrot, Polly, 1 year.
6. H. Palmer, Lincoln, Ill., Cashmere or Angora goats.
7. S. O. Crandle, East Toledo, 1 bull calf, 3 months old.
8. George Fisher, Toledo, gelding, Jolly, 2 years.
9. John Van Houten, Toledo, gelding, 1 year.
10. N. A. Eggleston, Toledo, 2 pair Brahmas.
11. Beatty, Davis and Norton, Toledo, sturgeon.
12. S. M. Reed, Toledo, caged pair white mice.
13. S. O. Crandle, East Toledo, 1 bull calf, three months and fifteen days old.
14. S. E. Merry, Milan, 3 Leghorn chickens.
15. Thos. Morris, Toledo, heifer, 16 months.
16. J. S. Long, Highland, Kansas, herd of fifty Indian ponies.
17. J. Gibbs, Norwalk, cage English Ferrets.
18. Thos. Bridgewater, Toledo, bull calf, 2 months.
19. Daniel Barnes, Munson, pair steer calves, 5 months.

SHEEP—MERINOS.

C. Russ, Springville, best ram two years old and over	$30
R. C. Thompson and F. R Warren, Sylvania, second best ram two years old and over	15
Donnel & Yazel, Springfield, best ram under two years old	25
M. D. Benton, Middlebury, Vt., second best ram under two years old	15
J. & G. Wood, Saline, Mich., best pen of ewes two years old and over	30
" " second best pen of three ewes two years old and over	15
R. J. Critchfield, Mt. Vernon, best pen of three ewes under two years old	30
J. & G. Wood, Saline, Mich., second best pen of three ewes, under two years old	15
J. K. Brant, Steubenville, best ram lamb	10
J. & G. Wood, Saline, Mich., second best ram lamb	5
J. K. Brant, Steubenville, best pen of 3 ewe lambs	15
R. J. Critchfield, Mt. Vernon, second best pen of three ewe lambs	8

REPORT OF COMMITTEE.

GENTLEMEN:—Your committee on Merino Sheep would respectfully report as follows:

In the class of two year old rams, we award the first premium to the ram of Russ, of Michigan, as possessing *more* of the qualities to be desired in a stock ram than any of his competitors. The second we give to R. C. Thompson. The committee regret that they were unable to award premiums to the fine rams of the Messrs. Woods and of Mr. Brant—the former excelling in many points, as carrying a fleece of good quality and remarkable density, with the greatest uniformity over the belly and hips, but wanting that robust and vigorous development so essential to a stock animal; the latter exhibiting, as will be seen, the finest *lambs* on the ground.

In yearling rams, we award the first premium to the ram of Donnel & Yazel; the second to Benton, of Vermont—both being animals of good promise.

In two year old ewes, we give the first and second premiums to the pens of the Messrs. Woods, of Michigan. It was a question with some of the committee if the fine pen of five year olds exhibited by Mr. Thompson were not entitled to a premium. Their advanced age and inferior condition, however, made them compare so unequally, that the committee determined to make the awards to the younger pens.

In yearling ewes, the committee were again perplexed; but the superior bellies in the pen of R. J. Critchfield unquestionably gave him the right to the first. The second was fully deserved by Messrs. Woods, of Michigan.

In ewe lambs the show was especially good, and the committee were not long in deciding that Mr. Brant's were fairly entitled to the first, and Mr. Critchfield to the second.

The same can be said of the ram lambs—Mr. Brant carrying off the first, and Mr. Woods the second.

The show of merinos was by no means equal, either in numbers or quality, to that of some previous years, when wool-growing was profitable, and every one desiring to improve his flock. Still, the exhibition was a *good* one, and we were glad to notice that breeders were feeling cheerful and confident of better times close at hand.

The awards were made with great harmony and unanimity; not without hesitancy, in several instances, by some of the committee, but at least carefully and conscientiously by all.

AWARDING COMMITTEE.—T. V. Reber, W. H. Witter, S. H. White, S. W. Thomas, J. S. Delano.

LONG WOOL SHEEP—LEICESTERS.

Z. Eager, Wauseon, best ram two years old and over	$30
Samuel Toms, Oshawa, Canada West, second best ram two years old and over	15
Samuel Toms, Oshawa, Canada West, best ram under two years old	25
E. Driggs, Rome Centre, Mich., second best ram under two years old	15
T. F. Joy, Delaware, best pen of three ewes over two years old	30
E. Driggs, Rome Centre, Mich., second best pen of three ewes over two years old	15
T. F. Joy, Delaware, best pen of three ewes under two years old	30
Samuel Toms, Oshawa, Canada West, second best pen of three ewes under two years old	15
E. Driggs, Rome Centre, Mich., best ram lamb	10
W. W. Cheatham, Wauseon, second best ram lamb	5
T. F. Joy, Delaware, best pen of three ewe lambs	15
W. W. Cheatham, Wauseon, second best pen of three ewe lambs	5

AWARDING COMMITTEE.—John L. Mendreth, W. Mether, W. Alsdorf.

LONG WOOL—NOT LEICESTERS.

Thos. Aston, Elyria, best ram two years old and over	$30
Samuel Toms, Oshawa, Canada West, second best ram two years old and over	15
Thos. Aston, Elyria, best ram under two years old	25
“ “ second best ram under two years old	15
“ “ best pen of three ewes over two years old	30
“ “ best pen of three ewes under two years old	30
“ “ second best pen of three ewes under two years old	15
“ “ best ram lamb	10
Z. Eager, Wauseon, second best ram lamb	5
Thos. Aston, Elyria, best pen of three ewe lambs	15

AWARDING COMMITTEE.—R. Baker, Calvin Dodge, Wm. H. Launder.

SOUTHDOWN SHEEP.

Samuel Toms, Oshawa, Canada West, best ram two years old and over	$30
“ “ second best ram two years old and over	15
“ “ best ram under two years old	25
Thos. Bennington, LaPorte, second best ram under two years old	15
Samuel Toms, Oshawa, best pen of three ewes two years old and over	30
Thos. Bennington, LaPort, second best pen of ewes two years old and over	15
Thos. Bennington, LaPorte, best pen of three ewes under two years old	30
Samuel Toms, Oshawa, second best pen of three ewes under two years old	15
Hill & Jones, Delaware, best ram lamb	10
“ “ second best ram lamb	5
“ “ best pen of three ewe lambs	15
Thos. Bennington, LaPorte, second best pen of three ewe lambs	8

FAT SHEEP.

Hill & Jones, Delaware, best single fat sheep	$5
“ “ “ three fat lambs	10

AWARDING COMMITTEE.—John Martin, E. Newcomb, A. C. Shropshire, R. Baker, Jno. Donnell.

SWEEPSTAKES ON FINE WOOL SHEEP.

Donnels & Yazel, Springfield, best ram of any age, Chunk, Jr	$50
J. & G. Wood, Saline, Mich., best ewe of any age	25
J. & G. Wood, Saline, Mich., best pen of not less than five ewes of any age	50

AWARDING COMMITTEE.—S. J. Wright, Ambrose Frayer, Mr. Curtis.

SWEEPSTAKES ON LONG WOOL SHEEP.

Thos. Aston, Elyria, best ram of any age	$50
" " " ewe "	25
Samuel Toms, Oshawa, Canada West, best pen of not less than five ewes of any age	50

AWARDING COMMITTEE.—Samuel Laundon, R. Lewis, J. H. Shields.

SWINE—LARGE BREEDS.

C. S. & G. H. Gates, Brooklyn, best boar over two years old	$25
James McClung, Tontogany, second best boar over two years old	15
W. V. Mackey, Lambertsville, Mich., best boar under one year old	15
" " " sow under two years old	25
A. Thorpe, Clyde, second best sow under two years old	15
H. J. Eager, Wauseon, best sow with litter of not less than five pigs	25
M. McMillan, Toledo, second best sow with litter of not less than five pigs	15

AWARDING COMMITTEE.—David Selsor, John Martin, J. H. Shields.

SMALL BREEDS.

Samuel Toms, Oshawa, C. W., best boar over one and under two	$20
Edw. Burt, East Toledo, second best boar ever one and under two	15
W. S. Miller, Elmore, best boar under one year old	15
Samuel Toms, Oshawa, C. W., best sow under two years old	20
M. McMillan, Toledo, second best sow under two years old	15

AWARDING COMMITTEE.—J. T. Merriman, S. Davis, J. C. Wilson, Chas. Boesel.

SWEEPSTAKES.

C. S. & G. H Gates, Brooklyn, best boar of any age or breed	$25
Samuel Toms, O hawa, C. W., best sow of any breed or age	25

AWARDING COMMITTEE.—A. C. Shropshire, Edward Shropshire, A. A. Jewett.

POULTRY.

S. E. Merry, Milan, best pair China fowls	$5
Henry Bishop, Springfield, second best pair China fowls	3
" " best pair of game fowls	5
" " second best pair of game fowls	3
" " best pair of Dorkings	5
N. A. Whitney, Toledo, second best pair of Dorkings	3
Elias Reed, Waterville, best pair of Polands	5
Henry Bishop, Springfield, second best pair of Polands	3
" " best pair of Spanish	5
S. E. Merry, Milan, second best pair of Spanish	3
" " best pair of Bolton greys	5
Henry Bishop, Springfield, best pair of Domeniques	5
O. Mason, Wauseon, best pair of bantams	2
Fred. Reed, Toledo, second best pair of bantams	1
Henry Bishop, Springfield, best pair of pheasants	5
" " second best pair of pheasants	3
Lyman Miller, Clyde, best pair of Cayuga ducks	5
Henry Bishop, Springfield, second best pair of Cayuga ducks	3
" " best pair of white Ayelesbury	5
S. S. Ketchum, Toledo, best pair of common ducks	5
Harry N. Hills, Delaware, second best pair of common ducks	3

S. S. Ketchum, Toledo, best pair of turkeys	$3
Arthur H. Jones, Delaware, second best pair of turkeys	3
Henry Bishop, Springfield, best pair of gray Chinese geese	5
" " best and largest exhibition of poultry, owned by one exhibiter	10

AWARDING COMMITTEE.—Richard Lewis, E. S. Willard, George Bliss.

SECOND DEPARTMENT.

MACHINERY, ENGINES, ETC.

Russell & Thayer, best stationary engine	$50
Stillwell & Pierce, Dayton, preventive steam boiler explosion	5
Harper, Gutman & Co., Pittsburgh, Pa., best hub boring machine	5
Hays & Seely, Edgerton, stave machine	5
Pierce & Co., Buffalo, New York, best shingle machine	Silver medal.
McBeth & McClung, Hamilton, wood planing machine	10
E. K. Wissell, Warren, wood turning machine	5
Stout, Mills & Temple, Dayton, water wheel	5

REPORT OF COMMITTEE.

We, the undersigned committee on Machinery, Engines, &c., beg leave to report as follows: Russell & Thayer, Toledo, stationary engine (oscillating), 1st premium. No competition. Stillwell & Pierce, Dayton, best preventive steam boiler explosion, 1st premium. The arrangement of purifying the water before entering the boiler, thus preventing the formation of scale on the inner surface, is, in our opinion, preferable to any on exhibition. The following entries, in our opininion, are not represented on the ground: Nos. 2, 4 and 5.

A. M. BURNES,
J. K. KENDALL,
B. BARRETT.

AGRICULTURAL MACHINES—FIRST DIVISION.

E. Ball & Co., Canton, best threshing machine	$30
Younglove, Massey & Co., Cleveland, best threshing machine operated by endless chain horse-power	10
J. C. Birdsell & Sons, South Bend, Indiana, best clover thresher and cleaner	10
Warder, Mitchell & Co., Springfield, best cider mill and press	10
B. B. Snow, Auburn, New York, best hand corn sheller	10
M. Deal & Co., Bucyrus, best smut machine	10
E. P. Dickey, Racine, Wisconsin, best fanning mill	10
Henry Phillipps, Toledo, best platform scales	10
" " best display of platform scales	10
Joseph Erb, Osborn, stock scales for general purposes, to be set up by exhibiter, and to be used by the Board during the Fair free of charge	15

REPORT OF COMMITTEE.

Your committee would say that the articles brought to our view were all of superior make, and that we would have been exceedingly glad had we been able to have given more premiums, as it was with great difficulty we could make a decision, especially as to the smut mill, cider mill and fanning mill; and in view of that fact, would recommend a premium to A. Pritz & Son, of Dayton, for smut mill; to Abram Fraher, on fanning mill; to Younglove, Massey & Co., on cider mill.

A. A. Jewitt,
C. S. Gates,
J. A. Harrison.

SORGHO AND MACHINERY.

W. R. Ford, Sylvania, best gallon sorgho syrup	$10
W. Redish, Monclova, second best gallon sorgho syrup	5
Blymyer, Day & Co., Mansfield, best sorgho mill	10
Thos. Whelpley, Monroe, Mich., second best sorgho mill	7
Blymyer, Day & Co., Mansfield, best sorgho evaporator	20

REPORT OF COMMITTEE.

The undersigned respectfully report: That the sorgho culture, we think, is increasing in our State and needs encouragement; that since its introduction it has saved thousand of dollars to the people of the State; and that, further, in examining the different kinds of syrups and the various machinery, we find it difficult to decide which is best.

A. A. Woodworth,
E. S. Willard,
Geo. Bliss.

SEEDING AND HARVESTING MACHINES.

Middletown Agricultural Works, Middletown, best wheat drill (two-horse)	$20
Thomas & Mast, Springfield, best wheat drill (one-horse)	5
Lowe Manufacturing Company, Adrian, Mich., best broadcast sowing machine	5
Burns Corn Planter Manufacturing Co., Elyria, best corn planter (horse power)	10
Thos. St. John, Willoughby, potato digger	5
Ira Ladd, Adrian, Mich., corn cultivator (two-horse)	5
W. S. Spratt, Pittsburgh, Pa., corn cultivator (one-horse)	3
G. C. Steel, Springfield, best corn shocking and cutting machine	5
Chas. Belden, Middlebury, best horse hoe	10
B. C. Taylor, Dayton, best horse hay rake	5
Ed. Huber, Marion, best horse hay rake, revolving wheel	5
H. Phillips, Toledo, best horse hay fork	5
A. D. Manley, Washington, Mich., best horse hay fork and stacker, combined	5

REPORT OF COMMITTEE.

First premium, two-horse grain drill, Middletown, (Butler county, O.) Agricultural Works. Facilities for feeding grain through flukes, superior; and the simplicity of gauging grain and empty grain box; the construction should recommend it for general use.

First premium, one-horse grain drill, to Thomas & Mast, Springfield, Ohio.

First premium to broadcast sowing machine was awarded to Peter Lowe, of Adrian, Mich. This is a two-horse machine and your committee can highly recommend it on account of its many superior qualities as a sower, and in harrowing and rolling the ground; also, its great strength and simplicity of operation.

In this class, your committee's attention was drawn to hand broadcast sowing machines, one of which (Rogers') elicited universal praise, for the manner in which it performed its work.

In corn planters there were great numbers, and your committee felt anxious that exhibiters in this branch of implements should receive due praise—all of whom are entitled to thanks from the farming community. The committee in making their final selection, awarded the first premium to the Burns Planter and Manufacturing Co., of Elyria, O.

First premium, corn cutter and shocker, to G. C. Steel, Springfield, O. There was no competition in this class.

In corn cultivators (two-horse) almost as many States were represented as there were machines. Ira Ladd, of Adrian, Mich., was the successful competitor in this class. The principal claims this cultivator has, are cheapness and durability, and the simplicity of its operation.

First premium, one-horse cultivator, to W. S. Pratt, Pittsburgh, Pa. Simple in construction, durability and great cheapness are the speaking points of this machine.

In horse hoes, Chas. Belden, Middlebury, Summit county, Ohio, presented one which entitled itself to the first premium.

First premium, in wheel horse hay rakes, was awarded to B. C. Taylor, Dayton, O. Easy adjustments to operate on different kinds of ground; also, superior material in manufacture.

In revolving hay rakes, there were but three competitors. Edward Huber, of Mariôn, Ohio, was justly entitled to the first premium on their implements, as the machine he represented was self adjustable, very simple in operation, and not liable to get out of order by careless handling.

First premium, horse hay fork, was awarded to Henry Philips, Toledo, O., who represented the "Harpoon," which is simple, easily handled, durable and cheap.

First premium, hay stackers, was awarded to Almon P. Manly, Mich. Simple in operating, self adjustable and cheapness.

First premium potato digger, to Thomas St. John, Willoughby, O. Simplicity, portability, easily operated and lightest draft.

Your committee, in concluding their report, would say, that they have examined seventy-eight pieces of machinery, in this class of agricultural implements, comprising drills, seeders, rakes, cultivators, and a host of others, all of which, we trust, was passed on impartially. One-half of these implements, if not seven-eighths, are master-pieces of ingenuity, and not one of the whole number, but can and will perform the work they are designed for; and if it were in the power of your committee, they would gladly confer marks of reward upon all the exhibiters in this class. Suffice it to say, the days of toil on the farm are certainly over, and the inventors and manufacturers are justly entitled to the grateful thanks of our farmers and agriculturists.

Respectfully,
J. L WOOD,
ROB'T BEATTY,
A. A. WOODWORTH.

REAPERS AND MOWERS.

W. A. Wood, best reaper, F. C. Goff, agent, Cleveland	$10
W. A. Wood, best reaper and self-raker, F. C. Goff, agent, Cleveland	10
D. M. Osborn, Cleveland, best mowing machine, Clipper	10
E. Ball & Co., Canton, best combined reaping and mowing machine, World	10
Warder, Mitchell & Co., Springfield, best clover seed harvester	10

REPORT OF COMMITTEE.

The committee having examined the machines submitted to their inspection, award the first premium, as a reaper, and also as a self-raker, to Walter A. Wood.

The first premium, as a mower, to the Clipper machine.

The first premium as a combined reaper and mower, to Ball & Co., of Canton. Clover-seed harvester not found. Grain binder entered in another class.

R. C. Thompson,
Wm. B. Jenkins,
W. L. Smith.

AGRICULTURAL MACHINES.

W. H. Wiley, Fredonia, N. Y., best horse-power sweep	$10
Shaw & Wells, Buffalo, N. Y., best endless chain horse-power	10
White & Bostwick, Norwalk, best saw-mill operated by horse-power	5
" " best log cross-cut saw-mill (horse-power)	10
W. G. Tuttle, Geneva, N. Y., best log cross-cut saw-mill (hand-power)	5
McKenney, Kerr & Co., Maumee, grubbing machine	5
A. Fahnestock, Toledo, best stump extracter	25
A. J. Sprague & Co., Toledo, best brick machine	10
D. Cornelius, East Toledo, best ditching machine	10
H. Brewer & Son, Tecumseh, Mich., best drain tile machine, with specimen of tile	20

Awarding Committee.—J. C. Johnston, J. R. Kendall, H. M. Reed.

PLOWS AND PLOWING MATCH.

Mitchell & Morrell, Maumee City, best plow for general purposes	$10
A. T. Beadle, Troy, best stubble plow	10
Miller & Cook, Canton, best sod plow	10
H. Heffelbower, Monclova, best steel plow	10
James Truesdale, Four Corners, best double plow	10
James Truesdale, Four Corners, best sub-soil plow	5
W. D. Burgess, Maumee City, best one-horse plow	3
A. T. Beadle, Troy, best double-shovel plow	2
R. Hill, Monroeville, best dynamometer	2
Mitchell & Merrill, Maumee City, best display and greatest variety of plows	20

Awarding Committee.—A. D. Gunn, E. S. Willard, Edward Swander, David Morrow, Harvey Kellogg.

TOOLS AND IMPLEMENTS.

Henry Philipps, Toledo, best set of drain tools	$5
A. & A. Maybee, Monroe, Mich., best farm road scraper	2
N. R. Kinne, Monroe, Mich., field roller and crusher	5
Wm. M. McDonald, Columbus, best harrow	3
Peekskill Plow Works, G. E. Hutcheson, Agent, Cleveland, hay and straw cutter	5
Henry Philipps, Toledo, best agricultural boiler	3

Awarding Committee.—E. S. Willard, A. D. Gunn, J. G. Baisch.

IMPLEMENTS AND FIXTURES.

Union Fence Co., Painesville, best ornamental fence	$10
John Augsperger, Trenton, best portable fence	3
E. P. H. Capron, Springfield, best farm gate	3
" " best fruit ladder	3
" " best fruit and step ladder	3
" " best extension ladder	3
E. Matchem, Pittsfield, sheep chair	3
S. L. Cheney, Wooster, dry house	5
Henry Philipps, Toledo, dog power	3

Awarding Committee.—Smith Ferris, Thos. Shoemaker.

HOUSEHOLD IMPLEMENTS.

C. Unverzagt, Terre Haute, Ind., hand-power loom	$20
A. O. Verey, Andover, N. Y., hand-power loom, second prize	10
N. C. Mitchell, Marion, bee-hive (without bees)	3
Wm. Davidson, Detroit, Mich., refrigerator	2
Harsen & Kline, Norwalk, butter worker	5
Stack, Still & Dellig, sausage meat cutter and stuffer	1
A. Miller, Miamisburg, washing machine	3
Grant & Farris, Cleveland, clothes wringer	2
H. H. G. Smith, Toledo, clothes horse to occupy least space	2
Saffell & Baldwin, Tiffin, half dozen wash boards	1
Foulds & Wright, Cincinnati, well pump	3
J. Daykin, Cleveland, apparatus for raising water	2
G. C. Thompson, Hudson, Mich., best dozen corn brooms	2
Saffal & Baldwin, best churn	5

REPORT OF COMMITTEE.

The committee, with great pleasure, have, in the arrangement and management of the department, as well as in the quality and number of the articles, seen a great improvement, and think that the interest taken by all of the managers and officers of the Society, as well as the interest there is taken by the people (as is evident by the immense crowd), clearly and conclusively stamp this Fair as a success, and is worthy of the effort and expenditure, "if it took all summer."

J. C. JOHNSTON,
J. R. KENDALL.

THIRD DEPARTMENT.

MECHANICS' AND MANUFACTURERS' PRODUCTS.

WORKED METALS.

C. N. Yeager, Toledo, best display of brass work	$5
Heckman & Gerber, Toledo, axes	3
Dodds, McNeal & Urban, Cincinnati, locks	5
Wm. H. Cloud, Fremont, best door lock	5
Seth Griffin, Elyria, horse shoe	2
C. N. Yeager, Toledo, gas chandeliers, burners	5
Cleveland Non-Explosive Lamp Co., lamps	3
H. Philipps, best display of reaping and mowing machine knives	5
Griffin & Lacy, West Meridian, Ct., sash fastener	2
P. H. Foster, Toledo, mechanics' tools other than coopers	5
Heckman & Gerber, Toledo, table cutlery	3
" " pocket cutlery	3
Toledo Silver Plate Co., silver ware	5
Woodruff & Thomas, Toledo, best eave-trough fastener	3
P. H. Foster, Toledo, kitchen utensils of tin	3
Barry, Evans & Co, Dayton, circular saws	Silver medal.
Smith & Peckham, Toledo, mill saws	"
" " hand saws	"
Braddeley, Smith & Peckham, Toledo, files	"

AWARDING COMMITTEE.—R. B. Walker, A. A. Jewett, P. Vanneet.

STOVES, CASTINGS, Etc.

Ballard & Rood, Toledo, best cooking stove for wood	$10
Woolson, Hitchcock & Carter, Cleveland, best cooking stove for coal	10
Ballard & Rood, Toledo, best parlor stove	10
W. H. Bennett, Toledo, best warming furnace or other apparatus	10

CABINET WARE.

E. Erb, Toledo, best dressing bureau	$10
B. Meilink & Co., Toledo, sofa	10
B. W. Rigby & Co.. Toledo, lounge,	2
B. Meilink & Co., Toledo, office chair	2
B. W. Rigby & Co., Toledo, sets parlor chairs	5
B. Meilink & Co., Toledo, center table	5
" " set parlor furniture	20
" " display of furniture	20
" " display of mattresses	5
Cole, Nelson & Co., Cincinnati, seats and desks for schools	3
B. Meilink & Co., Toledo, writing desks	2
" " sick chair or couch	3

Awarding Committee.—H. N. Carter, T. L. Clark.

VEHICLES.

Merts & Riddle, Ravenna, best two-horse family carriage	$30
" " best one-horse family carriage	10
P. Van Ness & Son, Tiffin, best top buggy	10
L. B. Gifford, Toledo, best trotting wagon	5
Wm. Moore, Elmore, best farm wagon	10
J. P. Moore, Fremont, best spring market wagon	5
" " best street goods wagon	5
H. Arms, Toledo, best sleigh	5

REPORT OF COMMITTEE.

We, the committee to whom the examination and awarding of premiums on vehicles were entrusted, have performed this duty impartially, and trust our decisions will meet the approval of all unprejudiced people. With due regard for the good judgment and beneficent intention of the committee who have the arrangement of the prize list, we would recommend that hereafter the list be left open to the competition of the world and not confined to the State. Respectfully, etc.,

J. E. Gardiner,
F. H. Bleeker,
B. F. McClung.

WOODEN-WARE.

Peppel & Co., Toledo, oak	$3

Awarding Committee—H. N. Carter, T. L. Clark.

CHEMICALS.

James Pyle, New York City, best Prussian blue	$2
F. S. Pease, Buffalo, N. Y., best linseed oil	2
Palace Paint Company, Bellefontaine, O., best white lead	2

James Pyle, New York City, best display of soap	$2
" " " " potash	2
F. S. Pease, Buffalo, N. Y., best specimen of lard oil	2
S. Burwell & Co., Zanesville, best display of writing fluid	5
W. Larter, Morristown, N. J., best display of blacking	2
F. S. Pease, Buffalo, N. Y., best display of lubricating petroleum	5
West & Truax, Toledo, best display of illuminating non-explosive mineral oil	25

AWARDING COMMITTEE—G. N. Abbey, A. R. Rogers.

GLASS, CROCKERY, STONEWARE, BRICK AND TILES.

J. Park Alexander, Akron, best stoneware	$10
West & Truax, Toledo, best plate glass	DIPLOMA.
Kerns, Herdman & Gorsuch, Zanesville, best window glass	"
H. L. Phelps, Toledo, best flint glass	"
Kerns, Herdman & Gorsuch, Zanesville, best bottles, green glass	"
" " " " best vials	"
" " " " best demijohns	"
J. P. Alexander, Akron, best fire bricks	"
" " best pressed brick	"
" " best display of stoneware	"
Kerns, Herdman & Gorsuch, Zanesville, best display of glassware	"
New Lisbon Salt Co., New Lisbon, best barrel of common salt	"

AWARDING COMMITTEE—G. N. Abbey, G. W. Galloway.

FOURTH DEPARTMENT.

FARM PRODUCTS AND DOMESTIC MANUFACTURES.

FLOUR AND GRAIN.

Canfield and Geeseman, Fremont, best barrel red wheat flour	DIPLOMA and $5
H. L. Warriner, Genoa, best two bushels white winter wheat	10
D. C. Richmond, Sandusky, second best two bushels white winter wheat	5
Jas. W. Ross, Perrysburg, best two bushels amber white winter wheat	10
Stephen Ten Eyck, Sylvania, second best two bushels amber white winter wheat	5
James Mickens, Toledo, best two bushels red winter wheat	10
Thos. Bennington, Laporte, best sample spring wheat, not less than half a bushel	5
F. T. Pennywell, Perrysburg, second best sample spring wheat, not less than half a bushel	3
Geo. Anderson, Painesville, best sample rye, not less than half a bushel	5
" " " oats, " " "	5
" " " barley	5
J. Birehfield, Holland, best sample buckwheat, not less than half a bushel	5
J. T. Merriman, Burton, best sample flax seed, not less than half a bushel	5
Coleman Keeler, Perrysburg, best sample hops, not less than five pounds	5
J. T. Merriman, Burton, timothy seed, not less than half a bushel	5
F. T. Pennywell, Perrysburg, best sample clover seed, not less than half a bushel	5
J. Birchfield, Holland, best half bushel yellow corn	3

E. Hamilton, Holland, second best half bushel yellow corn	$2
J. C. Messer, East Toledo, best half bushel white corn	3
E. Hamilton, Holland, second best half bushel white corn	2
J. C. Messer, East Toledo, best half bushel early corn	3
W. Rawle, Toledo, second best half bushel early corn	2

AWARDING COMMITTEE—Henry Ridenour, Wm. C. Fisk, A. B. Bradley.

BUTTER, BREAD, ETC.

Mrs. Geo. W. Gove, Whiteford Centre, Mich., best lot ten pounds butter, in rolls	$10
Mrs. Susan Nye, Toledo, best lot not less than twenty-five pounds made in May or June	10
J. C. Messer, East Toledo, best twenty-five pounds made in May or June	10
Wm. R. Sprague, Reynoldsburg, second best lot, not less than twenty-five pounds, made in May or June	5
Wm. R. Sprague, Reynoldsburg, best tub or firkin, not less than fifty pounds, made at any time	20
Mrs. A. J. Keeney, Lambertsville, Mich., second best tub or firkin, not less than fifty pounds, made at any time	10
Wm. Watson, Toledo, best four loaves of domestic white bread	10
H. L. Phelps, Toledo, best four loaves of baker's bread, not less than 48 hours old	3
Worts & Co., Toledo, best crackers, (butter)	2
“ “ “ (sweet)	2
“ “ “ (Boston)	2
Mrs. R. P. Boody, Wauseon, best domestic corn bread	3
Mrs. W. H. Williams, Sylvania, best domestic rye bread	3
Miss L. Curtis, Painesville, best brown bread	5

AWARDING COMMITTEE—J. N. Marsh, A. W. Prant, Mrs. M. Church, Mrs. R. C. Thompson.

HONEY, PRESERVES, PICKLES, ETC.

S. P. Shipley, Olena, best ten pounds honey	$5
Lyman Miller, Clyde, second best ten pounds honey	3
A. A. Swope, Philadelphia, Penn., best canned tomatoes	3
Mrs. W. R. Sprague, Reynoldsburg, best canned blackberries	3
“ “ “ raspberries	3
A. A. Swope, Philadelphia, Penn., best canned peaches	3
“ “ “ pears	3
Mefford & Boalt, Norwalk, best canned apples	3
Mrs. W. R. Sprague, Reynoldsburg, best canned quinces	3
A. A. Swope, Philadelphia, Penn., best canned cherries	3
Mrs. W. R. Sprague, Reynoldsburg, best canned gooseberries	3
“ “ “ currants	3
A. A. Swope, Philadelphia, Penn., largest and best variety of canned fruits	10
Mrs. W. R. Sprague, Reynoldsburg, largest and best variety of pickles	10
Mrs. M. A. Robb, Olmstead, largest and best variety of jellies	10
Mrs. W. R. Sprague, Reynoldsburg, largest and best variety of preserves	10
Mrs. M. A. Robb, Olmstead, best peach jelly	3
Mrs. W. R. Sprague, Reynoldsburg, best preserved quinces	3
Mrs. B. A. Bishop, Toledo, best preserved peaches	3
Mrs. M. A. Robb, Olmstead, best preserved apples	3
A. A. Swope, Philadelphia, Penn., best preserved plums	3
M. R. Johnston, Toledo, best tomato catsup	3
Mrs. M. A. Robb, Olmstead, best cucumber catsup	3

Mefford & Boalt, Norwalk, best pickled cucumbers	$3
Mrs. M. A. Robb, Olmstead, best pickled peaches	3
Mrs. W. R. Sprague, Reynoldsburg, best pickled tomatoes	3
" " " walnuts	3
" " " butternuts	3
" " " mangoes and melons	3
" " " onions	3
Jas. W. Ross, Perrysburg, best pickled gherkins	3
Mrs. W. R. Sprague, Reynoldsburg, best specimen of portable soups	3
H. H. G. Smith, Toledo, best gallon maple syrup	5
H. H. G. Smith, Toledo, best ten pounds maple sugar	5

REPORT OF COMMITTEE.

We, the undersigned committee, appointed to examine articles and award premiums in Entry Book No. 44, have performed the labor and awarded the premiums, as noted in the margin in this book. We would call the attention of the Board to a new process of preserving fruits, by Mefford & Boalt, of Norwalk, O., specimens were on exhibition which were very fine, but not quite equal in flavor to those canned by the usual process, but we desire that this new principle be more thoroughly tested, and examined by more experienced and competent judges.

MRS. JULIA A. MALLET,
SAMUEL BLANCHARD,
MRS. ESTHER A. BLANCHARD.

POTATOES.

J. C. Messer, East Toledo, best half bushel Neshannock potatoes	$5
M. McMillan, Toledo, best half bushel white peach-low potatoes	5
M. R. Johnston, Toledo, best half bushel Jersey peach-blow potatoes	5
M. McMillan, Toledo, best half bushel Prince Albert potatoes	5
Jas. W. Ross, Perrysburg, best half bushel Buckeye potatoes	5
Wm. F. Chambers, Toledo, best bushel Garnet Chili potatoes	5
Thos. Bushnell, Hayesville, best half bushel early Goodrich potatoes	5
J. L. McColly, Tontogany, best half bushel early Harrison potatoes	5
R. Garner, East Toledo, best and earliest potatoes	10
A. B. Bradley, Maumee City, best half bushel of any other variety	3
W. R. Morrison, Toledo, best ten varieties of Irish potatoes	10
John Borton, West Unity, best half bushel sweet potatoes	5

REPORT OF COMMITTEE.

The undersigned, having carefully examined the potatoes entered for competition, find the same to be unusually fine and numerous. We find one-half bushel Early Rose entered by Mefford & Boalt, which are very large and fine and entitled to a premium, but no written statement presented.

MARTIN WARNER,
GEO. D. TREAT,
J. I. POVELL.

To the State Board of Agriculture of the State of Ohio:

I hereby certify that I purchased of George W. Best, of Utica, State of New York, last spring, one pound of Early Rose potato, from which I have raised two hundred and forty pounds, (240 lbs.) of potatoes; the half bushel herewith presented being part of the same.

R. GARNER.

TOLEDO, O., September 15th, 1868.

State of Ohio, Lucas county, ss:

On this 15th day of September, 1868, personally appeared before me, Richard Garner, who signed the foregoing statement, who being by me duly sworn, deposes and says that the statement therein contained is true.

ARNOLD McMAHON,
Notary Public, Lucas Co., O.

To the State Board of Agriculture of the State of Ohio:

I hereby certify, that in May, 1868, I purchased of B. K. Bliss & Son, of New York City, one pound of Early Rose potatoes. I planted them by single (61) eyes, upon the 22d day of May, upon 120 square feet of heavy loam clay soil, drained and heavily manured. In June I cut off 61 tops, made green cuttings of them, and rooted from them 60 plants, which I planted in July, in common heavy loam, cropped three years previously, twice with corn and once with potatoes and without any manure upon those crops, these sixty plants run a cultivator through them twice and hoed them up once. In 90 days I dug the first planting—was all matured, and the tops yellow and dried up—yield, 76 pounds, washed clean. In 73 days the frost killed the tops of the second planting from cuttings—yield, 48 pounds, washed clean. My object was to get a farm yield, with ordinary cultivation, upon ordinary soil. The quality boiled and baked is good, dry and mealy—better boiled than roasted—the half bushel herewith presented for your inspection being part of the above crop.

State of Ohio, Lucas county, ss:

Be it remembered, that on this 22d day of September, A. D. 1868, before me, the subscriber, a Notary Public, in and for the county and State aforesaid, William R. Morrison, who being duly sworn, according to law, says the facts and statements set forth in the within statement are true, as he verily believes.

WM. R. MORRISON.

Sworn to and subscribed before me, on the day and year above written.

J. A. CHASE,
Notary Public.

VEGETABLES.

Peter Holloway, Monclova, best 6 carrots	$2
D. C. Richmond, Sandusky, best 3 long blood beets	2
Robt. H. Freeman, Toledo, best 6 turnip beets	2
Jas. W. Ross, Perrysburg, best 6 sugar beets	2
John McMillan, Hickory, best peck of tomatoes	5
Geo. Powers & Sons, Perrysburg, best display of tomatoes in variety and quality	5
J. C. Messer, East Toledo, best 3 drumhead cabbages	3
D. C. Richmond, Sandusky, best 3 heads of red Dutch cabbage	2
Robt. Freeman, Toledo, best 3 heads of any other variety	3
M. R. Johnson, Toledo, best 3 heads of cauliflower	2
John Dan, East Toledo, pest half peck of red onions	2
M. Brown, Toledo, best half peck of yellow onions	2
M. McMillan, Toledo, best half peck of white onions	2
W. R. Sprague, Reynoldsburg, best display of onions in variety and quality	5
" " best half peck of peppers for pickling	2
" " best display of peppers in variety and quality	5
E. S. Willard, Cleveland, best 12 roots of salsify	2
John Cole, Toledo, best 6 stalks of celery	3
C. B. Holloway, Monclova, best marrow squashes	3
D. C. Richmond, Sandusky, best Hubbard squashes	3
W. R. Sprague, Reynoldsburg, best 3 winter crook-neck squashes	3

Peter Holloway, Monclova, best California squash	$3
Thos. Bushnell, Haysville, best display of squashes in variety and quality	2
Geo. B. Brown, Toledo, best display of pumpkins in variety and quality	5
E. S. Willard, best dozen sweet corn, green	3
Geo. Powers, Perrysburg, best display of sweet corn, in variety and quality, green or dry	5
D. C. Richmond, Sandusky, best 3 mountain sweet watermelons	3
" " best 3 watermelons of any variety	3
W. R. Sprague, Reynoldsburg, best 3 green-fleshed muskmelons	3
" " best 3 yellow-fleshed muskmelons	2
" " best and greatest display of melons of all varieties	5
" " best 6 cucumbers	1
" " best half peck Lima beans, in pod	2
James Dunipace, Perrysburg, best half peck white beans, dry	2
W. R. Sprague, Reynoldsburg, best half peck of kidney bush beans, in pod	2
" " best half peck field peas, dry	1
" " best half peck of garden peas, dry	2
" " best and greatest variety of peas, dry	3
E. S. Willard, Cleveland, best half peck gherkin cucumbers	2
D. C. Richmond, Sandusky, best 3 purple egg-plants	2
Wm. Mohr, Toledo, best and greatest variety of vegetables raised by one exhibiter	25

REPORT OF COMMITTEE.

The undersigned committee on Vegetables having performed the duty imposed upon them, to the best of their ability, submit the following report:

It affords us pleasure to say that the exhibition of articles submitted to our inspection has been large and of superior quality, and we have in no case awarded premiums to any article which can be considered in any sense inferior. Our awards are as follows:

Best 6 carrots, Peter Holloway, Monclova; best 3 blood beets, D. C. Richmond, Sandusky; best 6 turnip beets, Robt. W. Freeman, Toledo; best 6 sugar beets, James W. Ross, Perrysburg; best peck of tomatoes, John McMillan, Hickory; best display of tomatoes, Geo. Powers & Son, Perrysburg; best 3 drumhead cabbages, J. C. Messer, E. Toledo; best 3 heads red Dutch cabbage, D. C. Richmond, Sandusky; best 3 heads of any other variety, Robt. Freeman, Toledo; best 3 heads cauliflower, M. R. Johnson, Toledo; best peck red onions, John Dan, E. Toledo; best half peck yellow onions, M. Brown Toledo; best half peck white onions, M. McMillan, Toledo; best display of onions, M. R. Sprague, Reynoldsburg; best half peck peppers, W. R. Sprague, Reynoldsburg; best display of peppers, W. R. Sprague, Reynoldsburg; best celery, John Cole, Toledo; best salsify, E. S. Willard, Cleveland; best Hubbard squash, D. C. Richmond, Sandusky; best marrow squashes, C. B. Holloway, Monclova; best 3 crook-neck squashes, W. R. Sprague, Reynoldsburg; best California (properly French) squash, Peter Holloway, Monclova; best display of squashes in variety and quality, Thos. Bushnell. Haysville; best display of pumpkins, Geo. B. Brown, Toledo; best sweet corn, E. S. Willard, Cleveland; best display of sweet corn, Geo. Powers, Perrysburg, best mountain sweet watermelon, D. C. Richmond, Sandusky; best 3 watermelons of other varieties, D. C. Richmond, Sandusky; best green-fleshed muskmelon, W. R. Sprague, Reynoldsburg; best yellow-fleshed muskmelon, W. R. Sprague, Reynoldsburg; best display of melons, W. R. Sprague, Reynoldsburg; best 6 cucumbers, W. R. Sprague, Reynoldsburg; best half peck Lima beans, W. R. Sprague, Reynoldsburg; best half peck white beans, dry, J. Dunipace, Perrysburg; best kidney bush beans, W. R. Sprague,' Reynoldsburg; best half peck field peas, dry, W. R. Sprague, Reynoldsburg; best peck garden peas, W. R. Sprague, Reynoldsburg; best variety of peas, W. R. Sprague, Reynoldsburg; best half peck gherkins, E. S. Willard, Cleveland; best 3 purple egg-plants, D. C. Richmond, Sandusky; best and greatest variety of vegetables, W. Mohr, Toledo.

We also commend, as about equal with those to which first premiums are awarded, Hubbard squashes by J. Reynolds, Hickory, and in display of variety and quality of vegetables by D. C. Richmond, Sandusky.

All of which is respectfully submitted,

W. C. EARL,
GEO. BERKLES,
B. F. McCLUNG.

GRASSES AND GRASS SEEDS.

Not labeled, and not a sufficient number of *meadow* or *pasture* grasses to merit the premium (only one entry).

M. B. BATEHAM,
H. N. CARTER,
F. J. OBLINGER.

CHEESE—DOMESTIC MANUFACTURE.

L. H. Fowler, Munson, Geauga county, best cheese, one year old and over	$10
" " " best and largest lot	20
" " " best cheese under one year old	10
A. Gates, Toledo, second best cheese under one year old	5

REPORT OF COMMITTEE.

Your committee have examined the different entries in this class, and are gratified to be able to report that they find all the cheese examined to be of excellent quality and creditable to the dairy interest of Ohio.

ABEL KRUM,
ALBERT BUSKIRK.

FACTORY MADE.

S. E. & H. N. Carter, Painesville, best cheese one year old and over	$10
" " best and largest lot	20
" " best cheese under one year old	10
James Bell, Chagrin Falls, second best cheese under one year old	5

REPORT OF COMMITTEE.

Your committee found on exhibition three lots of cheese, all of excellent quality, fifty of which, by S. E. & H. N. Carter, are of very excellent and uniform quality.

GEO. ANDERSON,
N. B. JENKINS,
ABEL KRUM.

SWEEPSTAKES ON CHEESE.

S. E. & H. N. Carter, Painesville, for the best and largest display of cheese...SILVER MED.

REPORT OF COMMITTEE.

Your committee award to Messrs. S. E. & H. N. Carter, sweepstakes on the best and largest lot of cheese.

N. B. JENKINS,
A. D. HALL,
C. H. HARMON.

SADDLERS' AND SHOEMAKERS' WARE AND MISCELLANEOUS ARTICLES.

R. Biddleman, Toledo, best traveling trunk	$5
" " best carpet sack	2
A. H. Cooper, Milan, best set of carriage harness	2
Moore & Cole, Toledo, best set of farm harness	5
Hubbard, Graves & Co., Toledo, best display of leather	5
Moore & Cole, Toledo, best display of saddles and bridles	5
" " best display of hames	3
Wachter Brothers, Toledo, best pair gents' dress shoes	2
" " " Congress gaiters	2
" " " ladies' gaiters	1
" " " " slippers	1
" " " bootees	1
Julius T. Fry, Toledo, best display of bound account books	5
Claflin & Campbell, Perrysburg, best display of paper	5
Rickey & Stebbins, Toledo, best display of paper hangings and borders	3
J. A. Corbusier, Toledo, best soft hat	2
J. T. Sweet, Perrysburg, best display of buck gloves and mittens	3
J. A. Corbusier & Co., Toledo, best display of ladies' furs	3
" " " gloves and mittens	3
M. Seyler, Toledo, best fur robe	5

AWARDING COMMITTEE—S. Bement, W. W. Whitney, John J. Manor.

TEXTILE FABRICS AND MATERIALS OF WHICH THEY ARE MADE.

HOUSEHOLD FABRICS.

Mrs. M. Church, Painesville, best pair of woolen blankets	$5
Miss Lottie Robb, Olmstead, second best pair of woolen blankets	3
Mrs. M. Church, Painesville, best ten yards of flannel	10
Miss Lottie Robb, Olmstead, second best ten yards of flannel	5
Mrs. George Anderson, Painesville, best woolen carpet, fifteen yards	5
Mrs. M. A. Robb, Olmstead, second best woolen carpet, fifteen yards	5
" " best ten yards of linen diaper	5
J. B. Thorp, Warrensville, best ten yards of kersey	5
Mrs. M. Church, Painesville, best pair of kersey blankets	5
Miss E. Curtis, Painesville, best rag carpet, fifteen yards	10
Robert McColley, Tontogany, second best rag carpet, fifteen yards	5
Mrs. Downer, Bryan, best hearth rug	5
Mrs. Elizabeth Davis, Toledo, second best hearth rug	2
Mrs. H. W. Carey, Napoleon, best pair woolen knit stockings	2
Mrs. W. R. Sprague, Reynoldsburg, second best pair woolen knit stockings	1
" " best pair of cotton knit socks	2
Mrs. M. Church, Painesville, second best pair of cotton knit socks	1
Mrs. W. R. Sprague, Reynoldsburg, best pair woolen knit socks	2
Mrs. M. Church, Painesville, second best pair of woolen knit socks	1
Mrs. W. R. Sprague, Reynoldsburg, best pair of linen knit socks	2
Mrs. Lee Moore, Bowling Green, second best pair of linen knit socks	4
Mrs. W. R. Sprague, Reynoldsburg, best pair of cotton knit stockings	2
Martha Kellogg, Hickory, Lucas county, second best pair of cotton knit stockings	1
Mrs. J. T. Merriman, Burton, best pound of linen sewing thread	2
Mrs. Geo. Haines, Toledo, best pair of woolen fringe mittens	2

Mrs. M. Church, Painesville, second best pair of woolen fringe mittens	$1
Mrs. Geo. Haines, Toledo, best pair of woolen mittens	2
Mrs. Lee Moore, Bowling Green, second best pair of woolen mittens	1
Miss May Phillips, Toledo, second best pair, by misses under twelve years of age	1
Mrs. M. A. Robb, Olmstead, best worsted knit stockings	2
Mrs. M. Church, Painesville, best stocking yarn	2
J. B. Thorp, Warrensville, best woolen shawl	2
Mrs. M. A. Robb, Olmstead, best mill bag	2
Mrs. W. R. Sprague, Reynoldsburg, woolen knit shirt	2
Mrs. V. Braun, Toledo, best foot mats	2
Mrs. Dr. Jungblut, Toledo, best knit bed spread	2
Louisa Hines, Toledo, best wove bed spread	2
J. T. Merriman, Burton, best ten pounds of dressed flax	5
" " best five pounds of flax yarn	5
Mrs. W. R. Sprague, Reynoldsburg, best gentleman's shirt	2

Awarding Committee—D. W. Harris, Mrs. Col. W. H. Gibson, Mrs. R. R. McMeens.

NEEDLE WORK, EMBROIDERY, Etc.

Mrs. W. S. Isherwood, Toledo, best ottoman cover	$3
Mrs. W. Wilmington, Toledo, best fancy chair work with needle	3
Miss Kate E. Shounker, Toledo, best fancy chair cushion and back	3
Miss C. H. Coy, Toledo, best crochet shawl	2
Mrs. D. S. Canfield, Fremont, best worked shawl	3
Miss Emma Van Deman, Delaware, best lace cape	3
Miss Mary E. Horton, Piqua, best lamp stand mat	2
Miss Emma Sharp, Fremont, best ornamental needle work	3
Miss Emma Ohmer, Dayton, best silk embroidery	3
Mrs. A. W. Gleason, Toledo, best embroidered sofa cushion	2
Mrs. W. S. Waite, Toledo, best embroidered mantilla	3
Mrs. W. R. Sprague, Reynoldsburg, best embroidered table-spread	2
Mrs. W. S. Waite, Toledo, best embroidered children's clothes	3
Mrs. W. R. Sprague, Reynoldsburg, best embroidered undersleeves	2
Mrs. S. Cleveland, Toledo, best embroidered handkerchief	2
Miss Emma Ohmer, Dayton, best chenille embroidery	3
Mrs. H. E. Cary, Napoleon, best embroidery with beads	3
Miss Frank Foster, Toledo, best tetting collar	3
Miss Emma Van Deman, Delaware, best worked veil	2
Mrs. B. P. Boody, Wauseon, best worked handkerchief	2
Sherwood, Barker & Co., Toledo, best velvet bonnet	3
Mrs. F. W. Higby, Toledo, best straw bonnet	2
Miss Mary Hewitt, Toledo, best variety of linen embroideries	3
Mrs. F. W. Higby, Toledo, best group of artificial flowers	3
Mrs. W. A. Smith, Toledo, best variety of artificial flowers	3
Mrs. D. M. Brelsford, Columbus, specimen of wax flowers	2
Mrs. W. W. Whitney, Toledo, best group of wax flowers	3
Mrs. Henry Bennett, Toledo, best specimen of wax fruit	2
J. N. Straight, Manhattan, best specimen of moss or lichen work	3
Benjamin Wilson, Toledo, best specimen of cane work	3
Miss L. S. Hinds, Sylvania, best specimen of shell work	3
H. E. Carey, Napoleon, best specimen of braid work	2

Geo. Turner, Toledo, best embroidered picture	$2
Mrs. J. Crowell, Toledo, best white quilt	
Mrs. Nelson Sabin, Millbury, Wood county, best worked quilt	3
Mrs. E. Lockwood, Maumee City, best silk quilt	3
Mrs. M. Bundell, Delta, best patchwork quilt	3
Mrs. Wm. Baker, Toledo, best children's afgan	2

REPORT OF COMMITTEE.

The display in this department was of superior quality, and largely represented in numbers. Some articles found should have been in the list of non-enumerated articles; such we have commended as worthy of note. The balance we followed the direction found in the premium list, and marked them accordingly by giving the first premium.

John G. Gross,
Miss Mary E. Horton,
Miss Addie Peterson.

SILK AND MILL FABRICS.

Washington Woolen Mills, Maumee City, best ten yards of cassimere	$10
Tiffin Woolen Mills, Tiffin, best ten yards of satinet	10
" " best ten yards of tweed	5
" " best ten yards of flannel	5
Washington Woolen Mills, Maumee City, best ten yards of kersey	5
" " " best woolen shawl	5

Awarding Committee.—F. D. Skinner, Chas. Calahan, V. G. Gross.

SEWING AND KNITTING MACHINES.

Hulbert Brothers (Lamb's Family Machine), 17 West Fourth street, Cincinnati, best knitting machine	$10
D. B. Underhill, Toledo, (Howe's) best sewing machine for manufacturing purposes.	10
Geo. R. Pennell, agent, Toledo, (Florence) best sewing machine for family use	10

REPORT OF COMMITTEE.

The undersigned committee on investigation of sewing and knitting machines, have performed that duty to the best of their ability, and after carefully investigating the work of the different machines, find it somewhat difficult to give due examination. We find the Florence machine, in our opinion, the best machine for family purposes, and therefore award to it the first premium.

We also commend the American Combination and Button-hole Worker as being worthy of further consideration, and commend it to the notice of the public.

We also award to the Howe machine the honor of the premium as the best manufacturing machine.

Jos. Ralston,
Mrs. M. A. B. Townshend,
Miss A. D. Pelton,
Mrs. C. Cone,
B. F. McClung.

FIFTH DEPARTMENT.

HORTICULTURAL PRODUCTS.

FLOWERS.

Lenk & Co., Toledo, best floral ornament	$5
" " best and most beautifully arranged basket of flowers for table	3

Awarding Committee.—Mrs. John Fitch, Mrs. Dr. Bricker, Mrs. C. H. Warren.

PROFESSIONAL LIST—STOVE AND GREEN-HOUSE PLANTS.

Lenk & Co., Toledo, Best collection of not less than twenty varieties, variety and growth being taken into consideration	$15
Lenk & Co., Toledo, second best collection of not less than twenty varieties, variety and growth being taken into consideration	10
Lenk & Co., Toledo, best specimen plant in or out of bloom	3
" " " collection of not less than ten varieties of variegated leaved plants	5
Lenk & Co., Toledo, second best collection of not less than ten varieties of variegated leaved plants	3
Henry Philipps, Toledo, best collection of aloes and cactus in pots	2
" " " ferns and lycopodiums	3

Awarding Committee.—Miss Ada Breed, Miss Julia Fitch, Mr. John Dewitt.

CUT FLOWERS.

James Vick, Rochester, N. Y., largest and best collection of dahlias, not less than twenty-four named varieties	$5
Lenk & Co., Toledo, second largest and best collection of dahlias, not less than twenty-four named varieties	3
Lenk & Co., Toledo, best twelve varieties of dahlias	3
" " largest and best collection of roses, named varieties	5
Geo. Powers & Sons, Perrysburg, largest and best collection of verbenas, named varieties	3
Geo. Powers & Sons, Perrysburg, best twelve distinctly named varieties	3
Lenk & Co., Toledo, second best twelve distinctly named varieties	1
James Vick, Rochester, largest and best collection of pholxes, named varieties	2
" " best display of asters	2
" " " " gladiolus	3
" " " " coxcombs and amaranths	2
" " best and greatest display of cut flowers in variety and quality, other than the above	5
Lenk & Co., Toledo, best pair of parlor boquets, any style	2

STOVE AND GREEN-HOUSE PLANTS—AMATEUR LIST.

Mrs. M. Church, Painesville, largest and best collection of dahlias, not less than twenty-four named varieties	$5
Mrs. M. Church, Painesville, best twelve varieties of dahlias	3
" " largest and best collection of roses, named varieties	3
" " best twelve roses	3
" " best display of gladiolus	3

Miss Ada Sprague, Reynoldsburg, best display of coxcombs and amaranths	$2
Mrs. M. Church, Painesville, best and greatest display of cut flowers in variety and quality, other than above	5
Miss Ada Sprague, Reynoldsburg, second best display of cut flowers in variety and quality, other than above	3
Miss Ada Sprague, best collection of not less than twenty varieties	15
Caroline Cone, Toledo, best collection of gloxineas and achimenes	2

Awarding Committee—Mrs. S. S. Boughton, Miss Josephine Klippart, Miss Mary Kitchen, Rev. W. W. Willians.

FRUITS GROWN IN OHIO.

APPLES.

James Dunipace, Perrysburg, best six varieties	$12
D. C. Richmond, Sandusky, second best six varieties	6
Geo. Powers, Perrysburg, best approved variety not before described	3
Henry Hefflebower, Monclova, second best approved new variety	2
O. C. Wilson, Hickory, Lucas county, best three varieties of large size and beauty to rule	5
H. Hefflebower, Monclova, second best three varieties of large size and beauty to rule	3
H. Hefflebower, Monclova, best three varieties of market apples, profit to rule	5
D. C. Richmond, Sandusky, second best three varieties of market apples, profit to rule	3
Geo. Powers, Perrysburg, best variety of dessert apples, quality to rule	5
James Dunipace, Perrysburg, second best variety of dessert apples, quality to rule	3
H. Hefflebower, Monclova, best and most handsomely arraged basket of apples, not less than one peck, and made up of not less than six varieties	6
R. C. Thompson, Sylvania, second best and most handsomely arranged basket of apples, containing not less than one peck, and made up of not less than six varieties	3
D. C. Richmond, Sandusky, best display in variety and quality, not less than fifteen varieties, by professional fruit growers or nurserymen	15
H. Hefflebower, Monclova, second best display in variety and quality, not less than fifteen varieties, by professional fruit growers or nurserymen	10

Awarding Committee.—S. B. Marshall, Giles Boalt, H. B. Lum.

WINTER APPLES.

D. C. Richmond, Sandusky, best ten varieties grown by professional growers	$15
A. B. Strother, Findlay, second best ten varieties by professional growers	10
H. Hefflebower, Monclova, best five plates of large apples, size and beauty to rule	10
D. C. Richmond, Sandusky, second best five plates of large apples, size and beauty to rule	7
James Dunipace, Perrysburg, best six varieties, profit to rule	12
A. B. Strother, Findlay, second best six varieties, profit to rule	8
D. C. Richmond, Sandusky, best basket of ten varieties, not less than one half bushel	10
H. H. G. Smith, Toledo, second best basket of ten varieties, not less than one half bushel	7
D. C. Richmond, Sandusky, best display of thirty varieties grown by amateur	30
James Dunipace, Perrysburg, second best display of not less than thirty varieties, grown by an amateur, variety to rule	20
A. W. Maddocks, Toledo, best display of not less than thirty varieties, grown by a professional grower, variety and quality to rule	20

H. Hefflebower, Monclova, second best display of not less than thirty varieties, grown by a professional grower, variety and quality to rule	$20
A. B. Strother, Findlay, best plate of six Baldwins	2
" " best plate of six Belleflowers	2
P. J. Pelton, Fostoria, best plate of six Belmonts	2
James Dunipace, Perrysburg, best plate of six Canada Reds	2
H. Hefflebower, Monclova, best plate of six Fallanwaters	2
A. B. Strother, Findlay, best plate of six Jonathans	2
" " best plate of six King of Tompkins County	2
P. J. Pelton, Fostoria, best plate of six Northern Spies	2
D. C. Richmond, Sandusky, best plate of six Ohio Nonpareils	2
R. C. Thompson, Sylvania, best plate of six Peck's Pleasant	2
A. B. Strother, Findlay, best plate of six Esopus Spitzenberg	2
P. J. Pelton, Fostoria, best plate of six Rambos	2
R. C. Thompson, Sylvania, best plate of six Rhode Island Greenings	2
A. B. Strother, Findlay, best plate of six Rome Beauties	2
Thomas Bushnell, Haysville, best plate of six Roxbury Russets	2
A. B. Strother, Findlay, best six plates of White Pippins	2

REPORT OF COMMITTEE.

Your committee desire to report themselves highly gratified with the large and varied collection of apples, in a season which has been especially unfavorable throughout our State. It is also a matter of congratulation, that among so many hundred specimens they are all so generally correctly named.

M. H. Lewis,
Chas. Powers,
O. D. Ford.

PEACHES.

J. C. Smith, Berlinville, best six varieties of not less than six each	$10
D. C. Richmond, best three varieties of not less than six each	6
J. C. Smith, Berlinville, second best three varieties of not less than three each	3
" " best plate of one variety	3
Thos. Bushnell, Haysville, second best plate of one variety	2
D. C. Richmond, Sandusky, best display of not less than twelve varieties, grown by an amateur, quality to govern	20

PEARS.

Geo. Powers & Son, Perrysburg, best three varieties of summer and fall pears	$6
A. Fahnestock, Toledo, second best three varieties of summer and fall pears	3
E. S. Willard, Cleveland, best five varieties of summer and fall pears	10
A. Fahnestock, Toledo, second best five varieties of summer and fall pears	5
" " best ten varieties of fall and winter pears	20
Geo Powers & Son, Perrysburg, second best ten varieties of fall and winter pears	10
A. Fahnestock, Toledo, best half peck of Seckels	5
A. W. Maddocks, Toledo, second best half peck of Seckels	3
A. Fahnestock, Toledo, best half peck of Bartletts	5
Geo. D. Treat, East Toledo, second best half peck of Bartletts	2
E. S. Willard, Cleveland, best plate of Seckels	2
James Dunipace, Perrysburg, best plate of Bartletts	2
Z. Phillips & Son, Berlin Heights, best plate of Flemish Beauties	2
A. Fahnestock, Toledo, best plate of Louisa Bonne de Jersey	2
" " best plate of Onondagas	2

Geo. Powers & Son, Perrysburg, best plate of Beurre Diel	$2
E. S. Williams, Cleveland, best plate of Duchess d'Angouleme	2
Lenk & Co., Toledo, best plate of Beurre Clairgeau	2
Geo. D. Treat, East Toledo, best three plates of large pears, size and beauty to rule	5
A. Fahnestock, Toledo, second best three plates of large pears, size and beauty to rule	3
" " best three plates of market pears, profit to rule	8
Geo. Powers & Son, Perrysburg, second best three plates of market pears, profit to rule	5
A. Fahnestock, Toledo, best variety of dessert pears	3
James Dunipace, Perrysburg, best display of not less than twenty varieties, grown by an amateur, quality to rule	20
Geo. Powers & Son, Perrysburg, best display of not less than twenty varieties, grown by a professional, quality to rule	20
A. W. Maddocks, Toledo, second best display of not less than twenty varieties, grown by a professional, quality to rule	10

QUINCES.

N. Ohmer, Dayton, best twelve	$3
" " second best twelve	2
" " best peck	5
" " second best peck	3

AWARDING COMMITTEE.—J. A. Warder, N. Ohmer, Mrs. Church.

GRAPES (HARDY).

M. B. Bateham, Painesville, best ten varieties of not less than three bunches each	$10
Z. Phillips & Son, Berlin Heights, second best ten varieties of not less than three bunches each	7
O. D. Ford, East Cleveland, best six varieties of not less than three bunches each	6
Z. Phillips & Son, Berlin Heights, second best six varieties	4
Barney & Carlin, Sandusky, best three varieties of not less than three bunches each	5
O. D. Ford, East Cleveland, second best three varieties	3
M. B. Bateham, Painesville, best display, fifteen varieties of three bunches each	20
J. A. Harris, Cleveland, second best display, fifteen varieties of three bunches each	10
O. D. Ford, East Cleveland, best six bunches of Catawba	3
" " best six bunches of Isabella	3
C. H. Eddy, Toledo, best six bunches of Hartford Prolific	3
Barney & Carlin, Sandusky, best six bunches of Creveling	3
E. Case, East Toledo, best six bunches of Concord	3
Z. Phillips & Son, Berlin Heights, best six bunches of Delaware	3
Barney & Carlin, Sandusky, best six bunches of Ives	3
O. D. Ford, East Cleveland, best three bunches of Diana	3
J. S. Lowry, Berlin, best three bunches of Iona	3
Barney & Carlin, Sandusky, best three bunches of Isabella	3
J. A. Harris, Cleveland, best three bunches of Adirondac	3
O. D. Ford, East Cleveland, best three bunches of Rebecca	3
J. A. Harris, Cleveland, best three bunches of Allen's Hybrid	3
" " best display of Rogers' Hybrids	5

REPORT OF COMMITTEE.

The committee on Grapes respectfully report that the show of grapes at this Fair is better than the average of former years, both in number of good varieties and in the general appearance of the fruit. We regret that second premiums were not offered, as competition was very close in many cases where only one could be awarded. We think that the importance of grape culture warrants more liberality in premiums.

CHAS. CARPENTER,
J. STORRS,
W. R. MORRISON.

SIXTH DEPARTMENT.

FINE ARTS—DRAWINGS, PAINTINGS, ETC.

North & Oswald, Toledo, best life-size photograph colored in water colors, by Ohio artist	Diploma and $5
W. H. Machen, Toledo, best portrait from life in oil	10
" " best animal portrait in oil	10
" " best specimen of painting in oil by an Ohio artist	20
North & Oswald, best specimen in water colors	Diploma.
W. H. Machen, Toledo, best landscape from nature in oil by Ohio artist	10
Mrs. L. E. Burr, Toledo, best historical painting by an Ohio artist	10
Ralph Osborn, Toledo, best specimen of uncolored photograph	Diploma.
W. H. Machen, Toledo, best specimen of not less than twelve different objects of natural history in water colors by an Ohio artist	Diploma and $20
Mrs. R. D. Flinn, Toledo, best specimen of fruit or flower painting in oil	Dip. and 5
Mrs. Eliza Van Deman, Delaware, best specimen of fruit and flower painting in water colors	Diploma and 5
E. W. E. Koch, Toledo, best fancy painting in water colors	Diploma.
A. B. Waite, Toledo, best engraving	"
Strobridge & Co., Cincinnati, best lithographing	"
Felton & Bigelow, Cleveland, best specimen of penmanship	"
E. W. E. Koch, Toledo, best crayon drawing	"
Mrs. E. T. Mortimer, Toledo, best pencil drawing	"
Felton & Bigelow, Cleveland, best pen drawing	"
North & Oswald, Toledo, best specimen of porcelain photograph	"

AWARDING COMMITTEE.—Mrs. John Fitch, Mrs. C. H. Warren, Mrs. Dr. Blicker, Mr. Cleveland, John Jenney.

SCULPTURE, ETC.

Clark, Woodruff & Co., Toledo, best collection of marble work	$10
John O'Farrell, Toledo, second best " "	5
H. G. Neubert, Toledo, best carving in wood	Diploma.
L. Eggleston, Toledo, best collection of the greatest variety of insects	Dip. and $5
B. Wilson, Toledo, best collection and greatest variety of Ohio birds, prepared	"
Home Portable Gas Co., Toledo, best domestic gas apparatus, or models of	Diploma.

AWARDING COMMITTEE.—Geo. Dodds, M. S. Finch, John Tom.

REPORT OF SPECIAL COMMITTEE.

The undersigned were appointed by W. Lang a special committee on Domestic Gas Apparatus, and have examined the home portable gas machine exhibited by the Home Portable Gas Co., of Toledo, Ohio, and having fully examined the same, are of the opinion that the machine is in every respect practicable, and we give it our unqualified approval, and recommend it to the company for a diploma.

GEO. DODDS,
MRS. DR. BUCKER,
JOHN DEWITT.

Having occasion to express my opinion in regard to the Home Portable Gas Co., I can only say, that my impression as to the practicability and economy, the illuminating power and the price of the machine is most favorable.

E. W. Reves.

MATHEMATICAL INSTRUMENTS.

W. A. Smith, Toledo, best surveyors' compass	Diploma.

REPORT OF COMMITTEE.

The instrument for drawing curves, made and exhibited by W. A. Smith, Toledo, O., is a very fine piece of work; it will prove well adapted to the uses claimed for it, and we therefore take particular pleasure in giving it a special recommendation, and pronounce it eminently worthy of a *first premium*.

Mrs. E. T. Mortimer,
W. H. Macher.

DESIGNS.

Awarding Committee.—Mrs. E. T. Mortimer, W. H. Machen.

MUSICAL INSTRUMENTS.

W. W. Whitney, agent for A. H. Gates & Co., Toledo, best grand or semi-grand piano	Silver medal.
W. W. Whitney, Toledo, best piano, price $400 or less	"
Geo. Hall, Cleveland, best square piano	"
W. W. Whitney, Toledo, best violin	"
" " best reed organ for church, with two or more sets of reeds	"
" " best parlor organ	Diploma.
Geo. Hall, Cleveland, best melodeon	"
W. W. Whitney, Toledo, best flute	"
" " best clarionet	"

Awarding Committee.—Rev. C. F. Raeding, H. W. Hubbard, Isaac Dildine.

NON-ENUMERATED—SECOND DEPARTMENT.

Awarding Committee.—Thomas Bushnell, B. T. Miller, Otho Kanable.

NON-ENUMERATED—THIRD DEPARTMENT.

REPORT OF COMMITTEE.

The committe beg leave to say, that although there are a great number of entries in this class, nearly all are worthy of notice, and would suggest that all such as are marked "good," "very fine," &c., be inserted in the next year's premium list, and a premium offered.

J. B. Taplin,
O. W. Hall.

NON-ENUMERATED—FOURTH DEPARTMENT.

Awarding Committee—Miss Stella Cone, Mrs. M. P. Bingham, M. Bingham.

NON-ENUMERATED—SIXTH DEPARTMENT.

Awarding Committee.—J. Dewitt, Miss Mary Kitchen, Miss Julia Fitch, Miss Ida Breed, Miss McClelland, Mrs. Tricker.

COMMENDED ARTICLES.

FIRST DEPARTMENT.

Geo. Fisher, Toledo, gelding, Jolly, 2 years old.
J. Van Houten, Toledo, gelding, 2 years old.
J. S. Long, Highland, Kansas, herd of 50 Indian ponies.
H. Kellogg, Hickory, heifer calf.
S. O. Crandle, East Toledo, bull calf, 3 mos. 15 days old.
" " 2 bull calves, 3 months old.
Thos. Bridgwater, Toledo, bull calf, 2 months old.
Daniel Barnes, Munsen, pair of calves, (steer).
Thos. Morris, Munson, heifer, 16 months' old.
R. J. Critchfield, Mt. Vernon, ram of any age.
" " ewe of any age.
" " pen of 5 ewes.

SECOND DEPARTMENT.

Younglove, Massey & Co., Cleveland, Male's American cider mill and press.
A. Pritz & Son, Dayton, smut machine.
Ambrose Traher, Ripley, fanning mill.
D. Arndt, Janesville Wis., washing machine.
Hay & Seeley, Edgerton, stave planer.
" " " joiner.
A. J. Sprague & Co., Toledo, brick trucks.
C. S. Shepler, White House, combined circular and cross-cut saw.
J. S. Smith, Swanton, Corrou's patent lathe machine.
Chas. Richardson, Auburn, N. Y., machine for grinding mowing and reaping machine knives.
Kettering & Strong, Defiance, wood turning lathe for turning wagon hubs.
A. W. Graves, Toledo, machine for sawing wagon felloes.
W. J. Griffin, Albany, N. Y., egg carrier.
J. W. Yan, Chicago, Ill., wagon felloe cutting machine.
Wm. Stine, Elmore, gauge to tinners' forming machine.
McBeth & McClung, Hamilton, universal wood working machine.
A. D. Manley, Washington, Mich., hoisting and transferring pulleys.
W. Gates, Toledo, broom handle machine.
P. Hayden, Columbus, wire stretcher.
Chas. Beldon, Middlebury, washer cutter.
D. E. & A. H. Akins, Adrian, Mich., patent splint and slat cutter.
J. B. Thorp, Warrensville, wood boring machine, (Buckeye).
L. S. Colburn, Oberlin, blind slat tenoning and wiring machine.
" " " boring and marking machine.
Peter Lowe, Adrian, Mich., improved adjustable vice.
J. Darling, Cincinnati, automatic steam boiler feeder.
J. B. Fields, Madison, Wis., combined shears and punch.
J. L. Anderson, Schuylkill, Pa., corn cultivator and seed sower.
Chas. F. Holman, Connelsville, Pa., corn planter and cultivator.
Jason McVay & Co., Sidney, one sulky plow and cultivator combined.
Thomas & Mast, Springfield, sulky corn plow and cultivator.
Chas. Beldon, Middleburg, gang plow and cultivator combined.
Jacob Meyer, Attica, three shovel plows, one horse.
H. P. Stockton, Rockford, Ill., gang plow.
" " sulky plow.

Thomas & Mast, Springfield, wheat drill and grass seed grower combined.
A. J. Beadle, Troy, cast steel plow.
Jno. Bader, Sr., Perrysburg, Universal plow.
David Petticrew, Westville, Garden plow.
S. F. Seeley, Whiteford, Mich., hilling plow.
Allstatter & Shruyer, Hamilton, self raking attachment.
Gates, Skidmore & Co., Toledo, display of hand rakes.
Moore, Garlinghouse & Co., Madison, Ind., hay rake and loader.
Whitaker, Phillips & Co., Agents, Toledo, 4 samples hay and straw forks.
J. F. Garden & Co., Rochester, N. Y., J. F. Gardner's self raking and self binding harvester.
P. P. Works, by Geo. E. Hutchinson, Agent, Cleveland, hand corn and stalk cutter.
Dr. D. B. Neal, Mt. Gilead, Sorgho juice defecator.
Long, Black & Allstatter, Hamilton, case sickles.
Whitaker, Phillips & Co., Agents, Toledo, display of scythes.
Excelsior Fork Co., Tiffin, hay fork pulleys, variety.
E. M. Potter, Kalamazoo, Mich., three horse clevis, G. J. Marsh, Agent.
J. C. F. Keller, Nevada, grain toller.
P. S. Clark & Sons, Toledo, patent revolving harrow.
Coe & Wilkes, Painesville, even cut oscillating rake lower mulay.
" " self adjustable upper mulay.
Locke & Blymyer, Findlay, adjustable galley attachment.
Coe & Wilkes, Warrensville, iron putman.
J. S. Betts, Archbold, new rotary motion, propelling rudder.
J. W. Herberling, Mt. Pleasant, tornado root cutter, (for stock).
W. A. Flanders, Shelby, method of handling bees.
Hollenback & Penfield, Toledo, American fire extinguisher.
J. W. Nash & Co., Cleveland, universal premium scales.
A. Bushnell, N. Y., Shuler's family scales.
" " universal scales.
Jacob Ingold, Toledo, bird cage.
J. C. Prosser, Detroit, Mich., clothes line holder.
" " hooks for fastening machine belts.
Miller, James & Falson, Zanesville, patent railroad signal to prevent collisions.
James Pyle, New York, mill pick.
Smith & Peckham, Toledo, sausage cutter.
R. C. Browning. New York, lightning meat chopper.
W. Ead, Jr., Nashua, N. H., American Sheep-Shearing Machine.
" " " Belt Lacer.
Stillwell, Pearce & Co., Dayton, Stillwell's Patent Heater and Lime Catcher.
J. P. Smith, Cherry Hill, Penn., excavator.
Wm. Richards, Toledo, excavator.
James Grannis, Cleveland, harvester-cutter sharpener.
B. B. Chappin, Grand Blanc, Mich., plow cleaner.
Middletown Agricultural Works, Middletown, lard press.
Saffell & Baldwin, Tiffin, lard press and sausage stuffer.
H. P. Stockton, Rockford, Ill., castor coulter.
S. Byle, Osborne, self-winding chalk line.
A. R. Rodgers, E. Toledo, oil pyrometer.
A. Blackford, Marlborough, rock drill.
Dr. Reim, Sol. J. Houck, agent, Springfield, flour pump (Cochran's patent).
White & Bostwick, Norwalk, saw guide and log holder.
W. C. Gault, Ruggles, stock guard gate.

Valentine Wood, Richmond, Indiana, flood fence.
Kettering & Strong, Defiance, self-adjusting shafting-post.
" " " " —suspended.
Campbell & Hardick, Brooklyn, N. Y., steam pump.
E. C. Olmstead, Tiffin, Barnes' American Fruit Picker.
D. W. Goodel, Antrim, N. H., Lightning Apple Pearer.
C. W. Reed, Chagrin Falls, lock for iron hoop.
Thos. Daniels, Toledo, soda fountain.
H. Osborne & Co., Toledo, picture frames and house mouldings (display.)
H. A. Funk & Co., Wapakonetta, 3 sets truss hoops.
L. E. Moody, Toledo, reverse key drift.
J. C. McKenzie, Adrian, Mich., improvement in brick mould.

THIRD DEPARTMENT.

Heckman & Gerber, Toledo, polybladed knife.
American Steel Works, Pittsburgh, Pa., tools and machinery, steel (display).
Keystone Axle Works, " iron and steel carriage axles.
Russell & Thayer, Toledo, iron column (for building).
" " skeleton grate bar.
J. C. Blood, Conneaut, burglar and fire alarm.
A. Gleason & Co., Hillsdale, Mich., 6 sets engraved stencil dies.
" " 2 sets engravers' steel type for die sinking.
" " steel alphabet and fixtures.
" " steel name stamps of finest quality.
" " sample of national, court and society seal.
G. W. Warren, Toledo, addressing press.
W. Brown, New York City, stencil dies and samples.
E. & H. F. Booth, Columbus, Graham constructed carriage back-seat iron.
Ballard & Rood, Toledo, galvanized iron cornice and brackets.
Henry Phillips, Toledo, assortment of improved cast-iron pulley, with nuts lead faced.
Ballard & Rood, Toledo, assortment of coal heating stoves.
Fred. Burback, Toledo, 2 coffins.
Amer. Burial Case Co., by J. Z. Riley, Supt., Cincinnati, 2 burial caskets.
" " " " 1 burial case.
R. W. Rigby & Co., Toledo, set bed-room furniture.
E. Erb, Toledo, " " "
Suydam, Williams & Co., Toledo, display of chains.
R. W. Rigby & Co., Toledo, glass wtih table.
F. H. Hough & Co., Toledo, elastic sponge mattress.
" " " " pillows.
" " hair mattress.
" " hair bolster.
Conant & Thorn, Toledo, display of cane seat chairs.
S. D. Curtis & Co., " " "
C. Schulenburg, Detroit, Mich., billiard table.
H. & H. Park, Columbus, ironing table.
D. N. Hurlburt, Chicago, Ill., window screens (self-adjusting).
Peck & Colburn, Oberlin, window blind.
Stoner & Marlatt, Pittsburgh, Pa., no top buggy.
Joram Priest, Detroit, Mich., dump wagon.
Henry Etter, Vienna, 2 open buggies.
F. J. King, Toledo, light wagon.

L. J. M. Baker & Bro., Enon, Clarke co., carriage clip.
Smith, Kaiser & Co., Adrian, Mich., trotting sulky.
P. G. Clancy, per B. A. Smith, agent, Cherry Hill, Pa., shafting rail carriage top.
Gibbs Bros., by Z. Duprez, Canton, 2 double trees.
Trobridge Bros., Toledo, staves.
" " headings.
" " hoops.
" " flour barrels.
R. M. & W. C. Lockart, Waterloo City, Ind., sample of walnut lumber.
" " " " poplar lumber.
" " " " oak lumber.
" " " " white ash lumber.
" " " " cherry lumber.
Woodruff & Thomas, Toledo, water spout fastener.
Wm. Monypenny, by H. G. Woodin, Columbus, 2 continuous grain ash seats.
" " " 1 " " back.
" " " 1 piano body and seat. [and risers.
" " " 3 coal box body and seat with solid sill
Denise & Lehman, Dayton, self-propelling swing.
H. & O. Granger, Mich., eave-trough fastener.
Jesse Booker, Dayton, patent flower and tree tub.
Gates, Skidmore & Co., Dayton, broom handles.
" " curtain rollers and slats.
" " buck saw and frame.
" " fork handles.
Whipple Manufacturing Co., Wm. Car, agent, Detroit, Mich., patent spring seat.
Date & Burry, Detroit, Mich., samples of ornamental mouldings.
Conant & Thorn, Toledo, croquet set.
David Smith, Toledo, 3 pieces long pine lumber.
H. A. Robison, Cleveland, weather stripes.
B. W. Conway, Port Huron, Mich., spoke and fellow.
Newfane Box & Basket Co., Newfane, N. Y., fruit boxes, baskets and crates.
Toll and Paxton, Monroe, Mich., pure silica.
Lorenz Bros., Toledo, perfumery, silver wattle.
" " pomades, hair-oils, etc., display.
" " flavoring extracts.
J. B. Baldy & Co., Toledo, spices, coffees, baking powders, etc., display.
Palace Paint Co., Bellefontaine, display of assorted Palace Paint colors.
Am. Lead Paint Co., Springfield, oil and mineral paints.
F. S. Pease, Buffalo, N. Y., animal oil, lubricating.
Jacob D. Spang, Dayton, gas multiplier.
" " self-generating gas apparatus.
W. Watson, Toledo, soft soap.
A. B. Bradley, Maumee City, jar soft soap.
Hunter, Camp & Cook, Cuyahoga Falls, stone sewer pipe.
W. B. Watters, Lock Haven, Pa., renovator for brick walks.
West & Truax, Toledo, display of ornamental window glass.
Sword & Bro., Adrian, Mich., drain tile.
Kerns, Herdman & Gorsuch, Zanesville, enameled glass.
" " glass shades.
" " insulator.

S. P. Rowley, Philadelphia, Pa., glass fruit jars.
Wilcox Jar Co., New Haven, Conn., Wilcox fruit jar.

FOURTH DEPARTMENT.

Miss Ada Sprague, Reynoldsburg, plum butter.
Mary Shaver, Toledo, sheep made of butter.
J. T. Merriman, Burton, Geauga county, display of grain.
H. L. Phelps, Toledo, display of cake.
Worts & Co., Toledo, five loaves aerated bread.
" " display of crackers in variety.
Amos Lane, Toledo, white Russia turnips.
" " nutmeg musk melon.
" " stalk of asparagus.
" " Yankee pop-corn, green.
" " " " dry.
" " horse raddish.
Jas. W. Ross, Perrysburg, Bailey's blood beet.
Bronson & Messenger, Toledo, fine-cut tobacco.
J. Reynolds, Hickory, Hubbard squashes.
D. C. Richmond, Sandusky, variety of vegetables raised by one exhibitor.
Jas. W. Ross, Perrysburg, new German blood beet.
" " Liman's extra early blood beet.
" " yellow sugar blood beet.
Jas. Bell, Chagrin Falls, factory cheese under one year old.
S. E. & H. N Carter, Painesville, cheese three years old.
Moore & Cole, Toledo, display of horse collars.
" " " " blankets.
" " " carriage robes.
" " one pair fancy fly-nets.
" " " horse sheets.
R. Biddleman & Co., Toledo, sole-leather valise.
" " gutta-percha valise.
A. H. Cooper, Milan, one lot single harness.
" " " "
" " " "
Hubbard, Graves & Co., Toledo, boot tree, single rod.
" " double rod.
Eaton & Wilson, Toledo, colored leather.
" " sheep-skin mats.
B. W. Goodsell, Toledo, whips and lashes.
Chas. Beldon, Middlebury, boot and shoe parer.
Wachter Bros., Toledo, display of boots and shoes.
Moore & Cole, Toledo, lady's side saddle and bridle.
J. F. Sweet, Perrysburg, gent's furs, home production.
Mrs. O. Slocum, Toledo, canned strawberries.
Winfield & Co, Toledo, sample of fresh oysters.
P. J. Pelton, Fostoria, jar apple butter.
H. Kenyer, Toledo, traveling trunk, lady's, English sole leather.
Moore & Cole, Toledo, double carriage harness.
Toledo Blade bindery, Toledo, display of bound account books.
M. Seyler, Toledo, lady's furs.
J. A. Corbusier, Toledo, fur robe, carriage.

Mrs. C. S. Hower, Maumee City, three foot-mats.
Miss Georgie E. Clem, Toledo, gentlemen's shirts.
Mrs. Martha Green, Toledo, knit bed spread.
Mrs. W. W. Whitney, Toledo, ottoman cover.
Mrs. C. H. Coy, Toledo, ottoman cover.
Mrs. J. E. Purdy, " chair work (patch work).
Mrs. M. H. Hulburt, Toledo, chair cushion and back.
Mrs. Frederika Martin, " lamp mat.
Mrs. O. S. Hann, " lamp stand mat.
E. P. Day, " ornamental needle work.
Mrs. J. G. Paine, " " "
Mrs. Geo. Walbridge, " " "
Mrs. W. S. Waite, " silk embroidery.
Mrs. V. Brown, " two embroidered sofa cushions.
Miss S. B. Maltby, " embroidered childrens' clothes.
Mrs. W. R. Sprague, Reynoldsburg, embroidered handkerchief.
Miss Lotta Zoff, Olmstead, two embroidered handkerchiefs.
Mrs. Frank Haber, Toledo, embroidery with beads.
Mrs. C. B. Benedict, " two specimens linen embroidery.
Mrs. R. M. Bingham, Erie, Mich., worked quilt.
Mrs. Maria Robertston, Perrysburg, "
Mrs. E. R. Finch, Toledo, knit and embroidered counterpane.
Sherwood, Barker & Co., Toledo, embroidered corner for brackets.
Amelia Waunatka, Toledo, gold and floss silk embroidery.
Mrs. S. B. Maltby, " childrens' embroidered clothes.
Mrs. L. Habenthal, Waterville, wreath of flowers made of feathers.
Mrs. M. A. Carpenter, Toledo, display of artificial flowers.
Frederika Martin, " two pin cushions.
Mrs. W. W. Whitney, " carriage afghan.
Mrs. F. W. Higby, " display of millinery.
Sherwood, Barker & Co., Toledo, display of millinery goods.
Mrs. C. H. Coy, Toledo, worsted tidy.
" " crotchet.
" " bracket bead work.
Julius T. Frey, " ornamental book binding.
Garvin & Cameron, Toledo, display white shirts and bosoms.
J. Cooper Price, " gent's shirts and furnishing goods.
" " " fine shirts (puff bosoms).
" " " " (two plait).
" " " " (three plait).
" " " " (thirty-four fine plait).
Mrs. Geo. Deninger, " crotchet bed spread.
F. H. Hough & Co., " Crossley's body Brussells carpet.
" " velvet rugs.
" " welton mats.
" " one pair lace curtains.
" " opaque window shades.
" " one pair lamberkin.
" " gilt window cornice.
" " Marseilles bed spread.
Miss E. Hinn, " fancy work basket.
Mrs. Grueber, " lace handkerchief.
" " lace sleeves.

Mrs. F. Rosenbush, Toledo, seed wreath.
Babbitt & Herman, " display millinery goods.
Doughaday & Dutton, " Headly six cord spool cotton thread.
G. N. Storms, " four suits children's clothes.
A. Black, " display of hoop skirts and corsets.
Ida Klauser, " bead work wall basket.
Franz Naulters, " one pair pants with one seam only.
Mrs. M. Dixon, " napper bed spread.
Mrs. Wm. Davis, " carriage afghan.
Miss Joanna Webb, " machine sewing.
Mrs. O. R. Morse, " linen table cover (woven on hand loom).
Miss Belle King, " charm string one thousand buttons.
J. A. Granger & Co, " display of cotton batting.
Corlett, Shausenback & Co., Toledo, display of dry goods.
Mrs. F. M. Secor, Toledo, sewing machine work, (book muslin dress).
Mrs. J. A. Smith, " dress fluting.
Mrs. A. B. Waite, " worsted tidy.
Mrs. O. D. Ford, East Cleveland, tucked waist.
Livingston & Brown, Chicago, Ill., Parisian dress-makers' formula.
Hulbert Bros., Cincinnati, display of hosiery and fancy knit articles.
Miss Mary Braunschwiger, Sylvania, ornamental hair wreath.
Mrs. G. B. White, " log cabin bed spread.
J. W. Fitchs, Toledo, shell boat.
J. F. & W. B. Caulkins, Toledo, shell boat, 31 feet, 40 pounds.
Mrs. L. Thomas, Toledo, two crotchet tidies.
Mrs. W. S. Brainard, Toledo, two crotchet tidies.
Mrs. R. D. Flinn, Toledo, specimens wax work.
" " " "
" " " "
" " " "
Lamphen & Crumb, Toledo, paper bags.
Miss Mary E. Horton, Piqua, carriage afghan.
Mrs. M. C. Thatcher, East Toledo, agricultural wreath.
Miss Mary E. Horton, Piqua, two sets cretchet foiled mats.
" " one infant crotchet square.
" " " bib.
S. C. Johnston, Toledo, one tidy.
" " "
S. C. Johnston, Toledo, one tray.
Henry Eckler, Montpelier, pair seamless pants (domestic).
Nancy A. Downer, Medina, Mich., specimens wax statuary.
Cincinnati Daily and Weekly Times, Cincinnati, specimen of job printing.
Miss Mary Braunschwiger, Sylvania, ornamental basket.
Mrs. M. Seyler, Toledo, artificial wreath.
Mrs. J. E. Bronson, Toledo, Turkish cushion
Miss Laura, Crosby, Newark, cushion toilet.
Miss Stella Cone, Toledo, crotchet band.
Mrs. W. S. Waite, Toledo, worsted lap robe.
Eaton & Backus, Toledo, pair lambriquins.
" " pair gilt and walnut cornices.
" " carpet velvet medallion.
" " piano spread.
" " Paisly shawl.

Eaton & Backus, Toledo, 2 pair curtains.
Mrs. Levi Oswald, Tontogany, 1 fly brush.
Mrs. J. B. Thorp, Warrensville, medley box.
Mrs. S. J. Bronson, Toledo, carriage afghan.
E. W. Gleason, Cleveland, display of fancy sewing machine work.
Miss Emma F. Haskin, Toledo, fancy basket (seed work).
T. J. Brown, Toledo, Webster's Pictorial Unabridged Dictionary.
" " Illustrated Bible.
" " Bible Society Bible, large.
" " " " medium.
Wm. A. Lawrence, East Toledo, 2 bound volumes family records.
Miss E. Cromwell, linen towel made by hands of Prudence Johnson, in 1818.
Emma Waix, Toledo, tettin pin cushion.
F. H. Hough, Toledo, dimity curtains.
" " Nottingham curtains.
" " rose-wood cornice.
" " display of house furnishing goods.
Miss Emma Ohmer, Dayton, pair slippers, chenille and gold braided.
Miss Elizabeth Hays, Toledo, variety of buttons for curiosity.
Emma Post, Toledo, crotchet table spread.
J. G &. E. B. Paine, display of hair work.
Mrs. G. B. Brown, Toledo, frame of hair work.
Morenci Woolen Mills, Morenci, Mich., 9 yards fancy cassimere.

FIFTH DEPARTMENT.

R. C. Thompson, Sylvania, plate of six Baldwin apples.
" " " Belleflower apples.
Henry Heffelbower, Monclova, " Belmont apples.
A. B. Strother, Findlay, " Fallanwater apples.
" " " Northern Spy apples.
" " " Peck's Pleasant apples.
D. C. Richmond, Sandusky, " Esopus Spitzenburg apples.
" " " Rambo apples.
A. B. Strother, Findlay, " Rhode Island Greening apples.
J. Birchfield, Holland, " Roxbury Russett.
" " " White Pippin apples.

SIXTH DEPARTMENT.

H. Osborne & Co., Toledo, display of picture frames.
North & Oswald, Toledo, specimen of photograph colored in India ink.
" " display of photographs.
Ward & Curtis, Toledo, display of jewelry.
C. H. Stark, Toledo, 9 boards, specimens of graining.
Miss Ada Butler, Toledo, aquarium.
E. W. E. Koch, Toledo, ornamental rock work.
" " rustic flower vase.
H. L. Phelps, Toledo, ornaments for wedding, and fine cake.
North & Oswald, Toledo, case of card photographs.
" " imperial photographs.
F. Thorp, Bucyrus, India ink printing.
R. M. Wilson, Toledo, case of petrefactions.

T. J. Brown, Toledo, Braddley's Patent Croquet.
" " rose-wood table stereoscope.
" " Kirby's Glass Planchette.
J. E. Morehouse, Toledo, picture—moss and bark.
Henry Wyman. Maumee City, wooden chain.
Miss Helen Skinner, Toledo, steel engraving medley.
A. Floring, Toledo, ancient mug, 1691.
D. Douglas Bly (J. E. Gardner, agent), Chicago and Cincinnati, display of artificial arms and legs.
Wm. A. Smith, Toledo, design of bridge across Swan Creek, Lafayette St.
W. A. Craft, Toledo, model of improved steam boat.
Marshall Ross, Perrysburg, collection of native birds' eggs.
Geo. Hall, Cleveland, square piano.
W. W. Whitney, Toledo, 2 melodeons with 2 sets reeds.

EXHIBITERS' STATEMENTS.

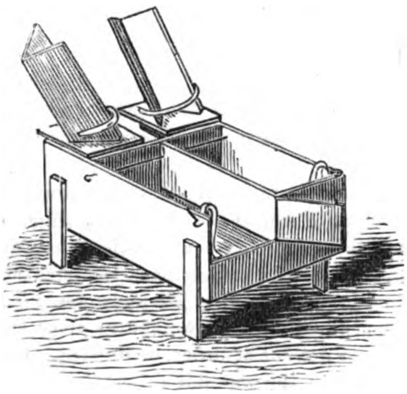
PEDIGREE OF CUMBERLAND.

Cumberland was sired by imported Scythian:
1st Dam (Sally Roper) was by imported Albion.
2d " was by imported Glencoe.
3d " " " Leviathan.
4th " " " Old Sir Archie.
5th " " " Citizen.
6th " (Sultana,) was by the imported Barb Horse, and out of the Barb mare presented to Thomas Jefferson by the Sultan of Turkey.

I certify the above pedigree as correctly given.

SOL. J. HOUCK.

G. D. MATCHEM'S COMBINED SHEEP CHAIR AND VAT.



Patented September 3d, 1867.

This invention consists of a water-tight Vat for containing liquid, and two Chairs for holding the sheep for trimming, tagging, etc.

The sheep are held in the chairs in an easy position by a strap across the brisket; the chairs revolve on a pivot, so that when the sheep is released, it can be let directly into the vat where is a liquid preparation for the cure of foot rot, in which the sheep stand secured by a strap around the neck, while the operator puts another sheep in the chair, The sheep are let out of the vat by opening a gate at their heads. Thus four sheep may be in hand at once, securing ease of treatment, rapidity of execution and thoroughness of treatment. We claim this arrangement to be superior to all others in all of the above particulars. The patentee claims that the worst cases of foot rot can be cured in four operations, and often with less. For a full description of the method of making the machine, the medicine, mode of treatment, etc., address

GEO. D. MATCHAM, Patentee, Pittsfield, Lorain Co., O.

COMBINATION BANK LOCKS—THE EXCELSIOR.

This combination lock, without key or key-hole, is absolutely secure from picking and violence. The action of its parts is direct and positive, independent of springs or gravity, and therefore perfectly reliable. Being provided with a double set of tumblers (as represented in plate,) it is not necessary to obtain direct access to the interior of this lock in order to effect the changes.

It is only necessary to place one set of tumblers out of gear with the other (which is done by turning a nut provided for the purpose,) and while they are in that detached position, a new combination can be given one set of tumblers, by operating the dial according to the proposed new combination; and then by bringing the other set of tumblers into gear the combination is imparted to it and the lock is ready for operation.

This lock can be made with six double tumblers susceptible of 46,656,000,000 changes, that can be effected by commencing to turn the dial from right to left, and a similar number from left to right.

THE DOUBLE DIAL EXCELSIOR,

Is made with two dials, each operating with a double set of tumblers and thus obtaining greater advantages than can be found in the use of two separate locks, for it is arranged so that different persons may operate the dials, each on his own combination, and one can not complete the operation, without the concurrence of the other; thus it is impossible for any one person to obtain access to the safe guarded by this lock, while the united security of two sets of double tumblers is consolidated on one bolt.

THE EUREKA.

To effect a change on the combination of this lock it is necessary to remove the cap and change the tumblers by hand; this is effected very easily, and whatever inconvenience there may be in doing so is compensated by the simplicity obtained in the mechanism of the lock.

Some lock makers have laid it down as an axiom that complication of the parts of a lock increases its security. Nothing can be further from the fact. It only increases its liability to get out of order. When a good principle is discovered, the great object is to obtain it with the fewest parts and the least complication of them; judged by this rule and Eureka Lock deserves its name. There is not a spring in the entire lock—none of the parts are dependent on their weight to place them in position. There is not any thing in it liable to get out of order, or to wear. It will last a lifetime, and is altogether under the control of the operator's hand.

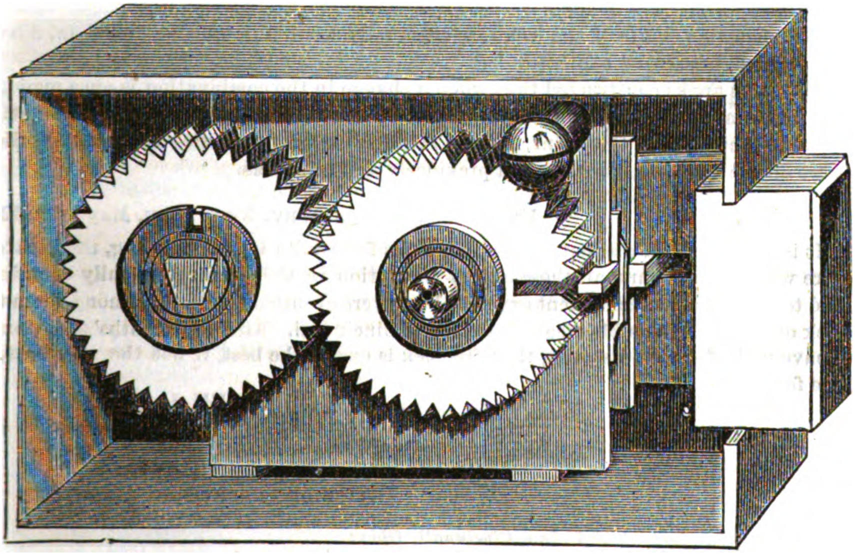
In the lock represented there are five distinct tumblers, affording 1,073,741,824 combinations. If it were possible to try one combination each moment, and to continue without interruption, it would take 2042 years 324 days 1 hour and 4 minutes to run through them all.

THE PERFECTION.

In addition to the locks described we make another, which from the simplicity of its construction and the amount of security obtained, we have called "The Perfection." It is also a combination lock operated by a dial, and so constructed that it is impossible to apply pressure against the tumblers.

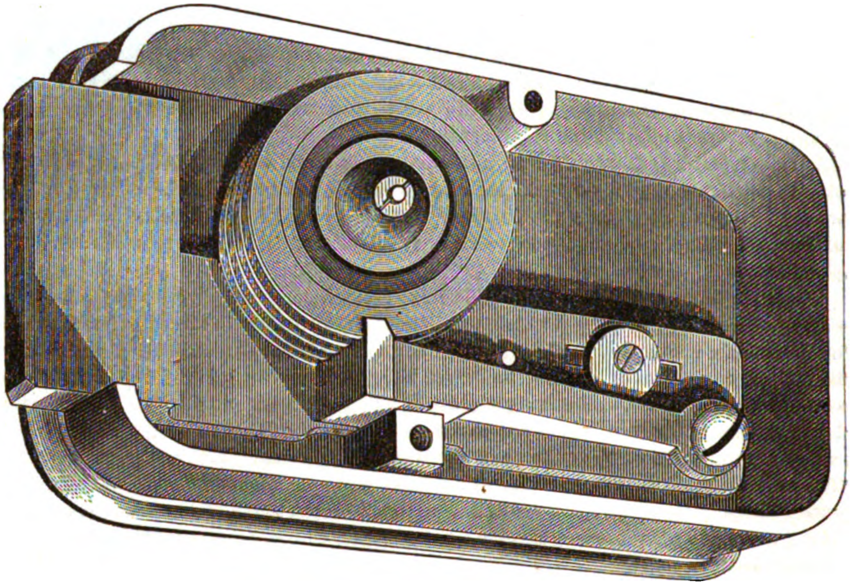
We use a small lock of this description on the doors of our fire proof safes, and being able to construct the larger locks for a lower price than the "Excelsior" or "Eureka," we are in a position to offer the best and latest improved locks, applicable to any kind of safe, affording any amount of security required, and at prices to suit the views of purchasers.

These combination locks have neither key or key-hole, and are operated from the outside of the door by turning a "dial," which communicates with the interior of the lock by means of a shaft passing through the door, made of cast steel, hardened so it can not be drilled, conical so it can not be driven through the door, secured on the inside so it can not be drawn out, and not rigidly attached to any portion of the lock, so that violence on the outside of the door can not be productive of any injury; and we can safely say entire security is obtained against any force that can be brought to bear. The only question that remains is, "Can these locks be picked?" We answer, "It is utterly impossible;" and are so well convinced of the truth of our assertion, that we offer (and have offered for years) a challenge of $1,000 to any person who differs in opinion with us on this subject.



Patented by N. Macneale, July 4, 1864.

THE PERFECTION LOCK—SIX TUMBLERS—308,915,776 CHANGES.



Patented by W. B. Dodds, March 14, 1868.

The operating shafts of the locks are effectually secured from being forced in, drawn out, drilled, broken or exploded.

The locks are so constructed that when a change in the combination is once made, can not be accidentally deranged during the operation of the lock. Many combination locks are defective in this point, and the result often is that parties can not open their safes on the combinations they had previously set their locks.

United States Treasury, New York, May 20, 1862.

It is generally known that in selecting locks for vaults in this building, the greatest care was exercised, and all those of any reputation in the country carefully examined and tested by a most competent expert. Four were eventually selected, among them the lock of Messrs. Dodds, Macneale & Urban, of Cincinnati. After two months' experience, I have no hesitation in stating that this lock is one of the best, if not the very best, of the four.

JOHN J. CISCO,
Assist. Treasurer U. S.

Treasury Department,
Office of Supervising Architect,
May 3, 1866.

Messrs. Dodds, Macneale & Urban, Cincinnati, Ohio:

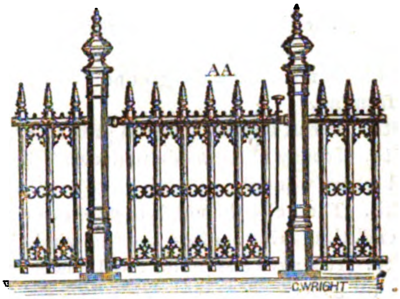
Sirs:—I have this day forwarded to your address, per Adams Express Company, a box containing sample locks submitted by you with your proposal for furnishing this department with burglar and powder-proof locks. Your proposal having been accepted by the Hon. Secretary of the Treasury, a contract will be prepared at an early day and transmitted to you for signature.

Very respectfully,

A. B. MULLETT,
Supervising Architect.

PATENT COMBINATION FENCE.

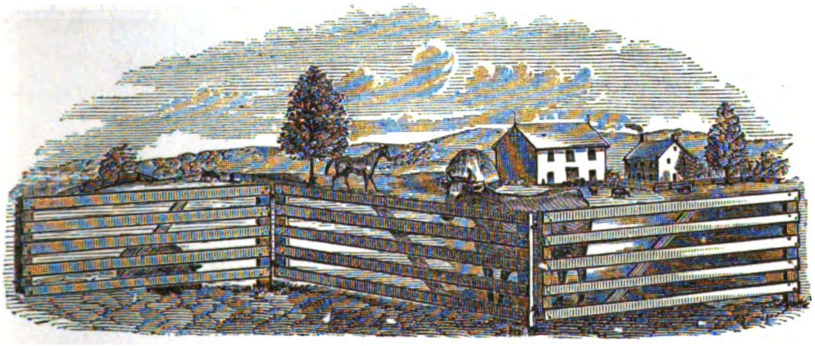
(*Manufactured by the Union Fence Company, Painesville Lake county, O.*)



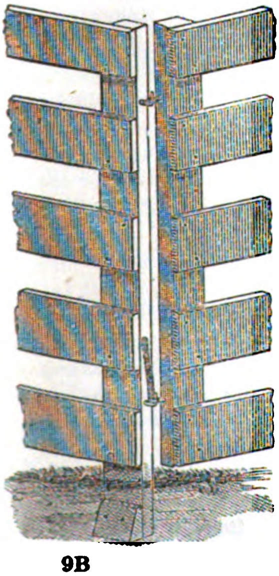
This illustration represents one of the twelve different styles of fence manufactured by the above company. The beauty of design, combined with the perfect protection of all its parts from decay, has given these fences a justly-earned reputation for durability wherever introduced.

The fence is manufactured from wood and iron combined, and, by a novel method, the whole is finished with a double coating of white lead, oil and lake sand, giving, when complete, the appearance of solid granite or brown stone. The fences are set on stone or iron foundations, each section being supported by an adjustable iron brace. The gates' ends and corners are provided with heavy iron posts of a new and beautiful design. Posts are only required at the ends and gateways.

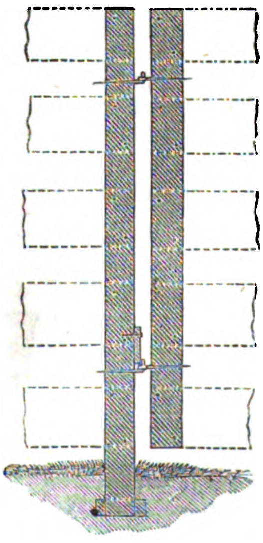
AUGSPURGER'S PATENT PORTABLE FENCE.



(*Patented April* 16, 1867.)



The attention of farmers is especially called to this valuable improvement, combining, as it does, all the remarkable features of excellence—simplicity, strength and durability; can be constructed by any farmer from common materials and with common tools; besides this, there is no waste of materials in any manner. It may be taken down and put under shelter, and again taken out and set up with remarkable facility. It is the cheapest and most serviceable of all the portable fences yet offered to the public. All who have yet seen and actually examined its merits—claims upon a discerning public—have fully accorded with the high opinion



entertained of it by the undersigned, who is thereby encouraged to speak with confidence, and sum up by declaring—

1st. It costs less than a common board fence.

2d. The simplicity of its construction is such as to enable any one to make his own fence.

3d. It rests upon the ground firmly, and requires no stakes to drive, props, mortices or framing.

4th. It can be used on even ground or hill side.

5th. It may all be made under roof if desired, and then taken out and set up when and where wanted.

6th. The rails do not lap, pass or cross each other as in other fences, but meet end to end, thus bringing into use the whole board.

7th. It makes a superior flood fence, as each pannel is connected to the one adjoining by a hook and eye staple in such a manner that it cannot become disconnected, so that if the fence is broken apart by a strong current, it will be kept from floating away by being attached to the remaining portion of the fence on dry ground.

8th. By using this portable fence, and fencing in only the fields you have cattle in, over fifty per cent. or one-half of the fencing may be saved, and the annoying briars kept down, and all the land brought under cultivation.

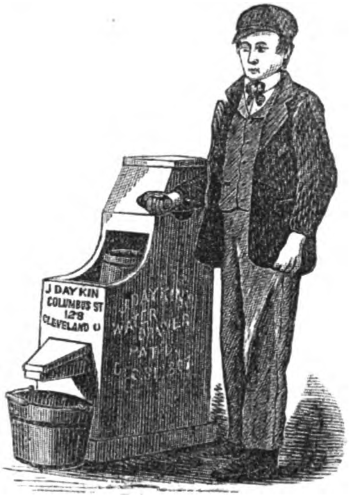
9th. It is particularly adapted to fence in hay or grain stacks, or for making sheep, hog or cattle pens.

The foregoing cuts give an idea of the manner in which the fence is made.

Persons desirous of purchasing State, county, township, or personal rights, should address, for full particulars, the patentee,

JOHN AUGSPURGER,
Trenton, Butler county, O.

DAYKIN'S IMPROVED WATER DRAWER—"QUEEN OF THE WEST."

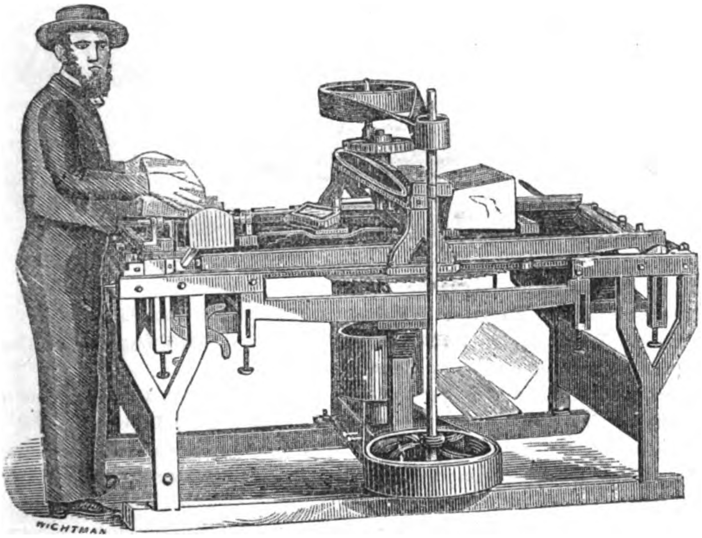


(Patented December 31*st*, 1867*)*

Is made in a substantial and attractive style, and is perfectly accurate and certain in its operation. It delivers the water into the spout from the bottom of the bucket

The top of the bucket is open to dip from when a small quantity is wanted. The chain is so constructed that it is impossible for it to slip. Any child can operate it with perfect safety that can lift a pail of water. It has no tubing of wood, lead or iron to make the water unwholesome. It is a complete, simple and effective elevator for raising water from any depth of well. Two styles are manufactured, single and double. Manufactured by James Daykin, Cleveland, Ohio.

PIERCE'S AUTOMATIC TWO BLOCK MILL.



Saws From 50,000 to 60,000 Shingles in Ten Hours.

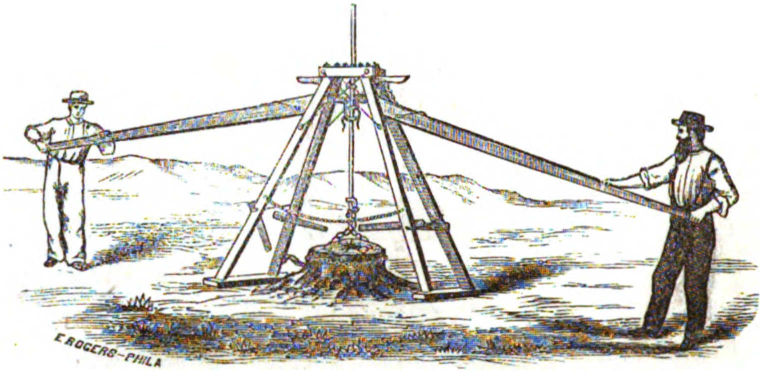
We unhesitatingly present this machine to the public as the best mill in use. It is constructed of iron and steel, is free from complication, and not liable to get out of order. When one block is being sawed the other recedes, elevated above the saw, which is done by the tracks, upon which the carriages run, being raised and lowered by a very simple arrangement. By this means the saw comes in contact with the timber when cutting only, the block receding clear of the saw, and consequently dulling the upper side of the saw no faster than the lower. Any one will readily see that the saw will run much longer before re-filing, and also avoid making clipped shingles as in other machines, when one side of the saw becomes duller than the other. We use 40-inch saws instead of 36, and consequently the carriage has less distance to travel to cut the same width shingle than in machines using 36-inch saws, and therefore do more work in the same time. We use a uniform feed instead of variable, and find that it does more work and better. The advantages of this machine, then, are: The large quantity of work turned out; its quality; the saving of labor, one man tending it easily; saving in saws and files, the saws requiring not more than one-half the filing; saws easier kept in order; uniform feed; carriage less distance to travel; saving of timber, and in being simple in construction and not liable to get out of order. Size of pulley, 12 inches. Speed of saw, 1,200 to 1,500.

We manufacture also one-block shingle and heading mills, both hand-feed and self-feeding. For further particulars apply to Pierce & Co., Buffalo, N. Y.

THE PIONEER STUMP-PULLER AND ROCK-LIFTER.

INVENTED AND MANUFACTURED BY GEORGE W. PRESSEY, HAMILTON, N. J.—A. FAHNESTOCK, AGENT, TOLEDO, OHIO.

(*Patented October* 8, 1867.)



The following are some of its advantages:

1st. Great power. Two men being sufficient to raise 25,000 pounds.

2d. Portability. Weighing only 255 pounds and fitted with handles, so that two men can easily move it from one stump to another.

3d. Quick action. The pawls being made to bite and hold on a smooth bar at any point, saving any lost motion that would occur in all ratchet machines.

4th. It works almost without friction, the levers working like a steelyard beam and the lifting-bar sliding loosely through the top, so that every pound applied draws directly on the work.

5th. Simplicity. The work is all so plain and easy that any common mechanic can make or mend any part of it.

6th. Durability. There is no wear except on the lever bolts, and they, if properly oiled, will last a long time. The lifting bar will, by use, become hard and smooth like a bar of steel, and remain so forever.

7th. The price comes within the reach of every farmer who has stumps to pull or rocks to dig. The small-sized machine, with grapples complete and ready for work, strong enough to raise 25,000 pounds, light enough to be moved easily by two men, with action quick enough to pull one hundred stumps per day, can be had for the low price of $60.

The next size, worked by three men, will raise 35,000 pounds, weighs 300 pounds, and costs $85.

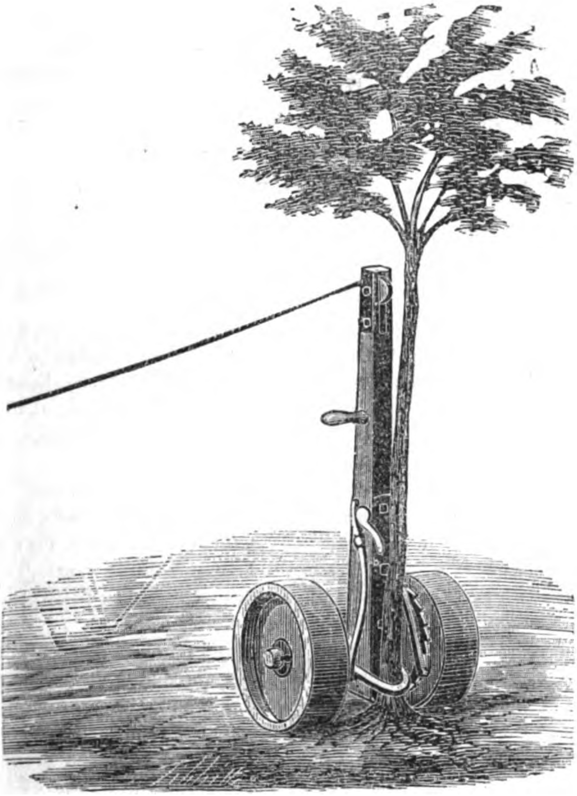
The largest size, worked by four men, will raise 50,000 pounds, weighs 450 pounds and costs $110.

The power of these light, simple and effectual machines is truly wonderful; but we do not wish it to be understood that they will pull the largest green stumps, nor would we advise any farmer to be at the expense necessary to raise such stumps, as it will not pay; but when the small fibrous roots have decayed, they can be taken out with one of these machines with little expense, and the soil will be left in much better condition. They have only to be tried, to be acknowledged the best in use. In some cases the purchasers say it has paid for itself in one month. A Maryland paper says, "It is wonderful to see this little giant lifting large stumps fifteen inches through from the solid ground, without cutting a single root." The committee at the New Jersey Central Fair, after awarding the highest premium of ten dollars, says: "This is without doubt the best stump-puller extant. The operation is simple and powerful, and the effect certain." The *Scientific American* says of it: "It is a very simple, powerful and effective lifting device." Two men set the machine beside the big old oak or chestnut stump that has been so long in the way, but must now be removed to "clear the way" for mowers, reapers and the improved labor-saving machinery of the day. The iron grapples pierce its sides, the levers begin to move, and the forest giant that has firmly held its place against winds and storms of a hundred years or more, is raised four feet in as many minutes; the dirt falls back in the hole and the work is done.

STUMP AND GRUB MACHINES.

McKenney, Kerr & Co.

As may be readily seen, these machines supply a very important branch of labor throwing upon horses and oxen the hard work, and most effectually prepare the ground for the use of other machinery, which is all important to the farmers at the present day; are far superior to anything before introduced, being light and handy, strong and durable, and may be profitably used by the farmer for his own use; and by the jobbe in doing work for others.



The cut represents a Grub Machine, for pulling standing grubs or small saplings and will pull those without cutting down, ranging in size from one inch to six inches in diameter, with one team. This is effected by means of a clevis, setting round the tree which may be seen in the cut.

The machine, as applied to larger stumps, may require two or four horses, according to the work to be done; may be operated quick and profitably. The extension hook applies to this machine also, and may be used to great advantage on small and low old stumps, and also, those which have been burned down in old fields.

In offering these machines to the public it is not claimed, (as some may erroneously suppose,) that they will pull up their entire forests, nor even all their stumps, without digging and cutting some roots; neither is it intended to show what is possible with great expense and labor, but rather what is profitable to do.

And further, if it was practicable to pull up green stumps or trees of two or three feet in diameter, it would be very far from being profitable for farming purposes; for a machine of capacity to do that, could not be portable and handy. And furthermore, if oak and black walnut stumps, of such size, were to be extracted, they would raise so much earth with the roots that they could not be disposed of, by either moving or burning them in any reasonable time or by any available means, and so would be more in the way than before. It may be further said, it is better to dig and cut some roots, and with the help of this machine, to do the worst part of the work than to have a machine too cumbersome for use for the many common stumps, by being made sufficient for the extreme few.

To say this much is deemed necessary for the information of those who have not considered the matter very closely; and also, to contradict the statement of those who tell big stories about what they and their friends have seen and heard, and whose tales grow larger by repetition.

Price of Grub Puller, $63; Stump Puller, $100.

STILWELL'S PATENT HEATER AND LIME CATCHER.

"*An Ounce of Prevention is better than a Pound of Cure.*"

We take pleasure in calling attention to E. R. Stilwell's Patent Heater and Lime Catcher, patented in October, 1864, since which time it has been in use, and has given entire satisfaction in all establishments where introduced throughout the country.

Steam, from its multiplied applications, has become throughout the civilized world an indispensable agent: hence the vital importance of the question, "How can the use of steam be rendered safer and more economical?"

The many serious difficulties attending the use of steam are well known to all who have had any experience in the use of the steam boiler. We will not stop to consider all of these difficulties, but only the most serious of them all, viz: the formation, in steam boilers, of what is commonly known to engineers as "scale," or "incrustation," a hard substance formed from the earthy salts contained in the water, which attaches itself firmly to the whole inner surface of the boiler.

The great destructiveness to the boiler, loss of fuel, frequent and expensive delays in cleaning, and not unfrequent explosions, all arising from the presence of this "scale," are facts well understood by all who use hard or mineral water for steam purposes.

Experiments by the most competent and scientific engineers have established the following facts, viz: "Scale, being a non-conductor of heat, the presence in a boiler of one-sixteenth of an inch is equal to a loss of about 15 per cent. of the heat in fuel." "The plates of a boiler never get hotter than the water when it is in contact with them, whatever may be the outside temperature, and the water never gets hotter than some 330° under a pressure of 100 pounds; clean boiler-plates would, therefore, last for years. But when coated with scale, and thus removed from direct contact with the water, they soon become so overheated as to deteriorate in quality and quantity." Explosions frequently occur by the cracking of this scale, and allowing the water to come in sudden contact with the overheated plates.

To remove this "scale" many expedients have been resorted to in the shape of powders, etc., but they are often worse than the scale itself, being largely composed of acetic acid, the effect of which, upon the boiler and engine valves, is most pernicious. All will admit it were much better to remove from the water all foreign substances which form scale, before the water passes into the boiler, (and at the same time avoid the great expense of an auxiliary boiler,) and thus prevent entirely the formation of any scale by supplying the boiler with pure feed-water.

To accomplish this is the object of Stilwell's Patent Heater and it does the work most thoroughly.

CONSTRUCTION AND OPERATION.—The Heater consists of a square or cylindrical (both forms are used) iron box, through which is passed the cold water from the well, and also all the exhaust steam from the engine. By its peculiar construction every particle of water is acted upon by the steam in such a manner as to set free all earthy salts held in solution. This earthy matter, consisting of combinations of lime, magnesia, sulphur, iron, etc., is deposited and crystalizes upon a series of movable shelves, which can be taken out and cleaned in an hour's time as often as need be. After flowing over these shelves, the water passes through a close filter in the bottom of the Heater, which renders it perfectly free from foreign substances, from whence it is forced, boiling hot, directly into the boiler.

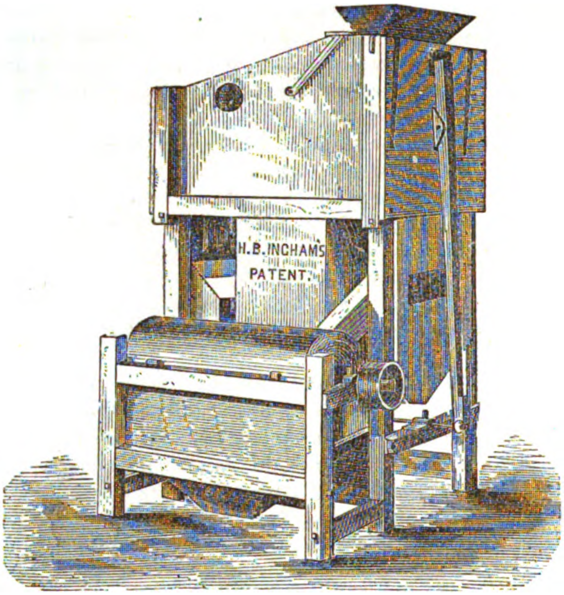
It is simple and substantial, cannot get out of repair, and, if properly taken care of, will last a lifetime. Another fact largely in its favor is, there are no contingent expenses in operating it, as nothing but the escape steam is used to do the work, so that its original cost is the only expense incumbent upon using it.

WHAT IS CLAIMED FOR IT.—It is claimed that, regarded simply as a Heater, it is the best in the world; and as a Lime Extractor it stands alone, unrivaled in its perfect action. We claim that the use of our Heater will effect a saving of at least ten per cent. of fuel where soft water is used, and when hard and impure water is used, it will effect a saving of from fifteen to fifty per cent. of fuel, not to mention the saving to the boilers; in time; and in obviating the necessity, occasioned by "scale," of frequently "blowing off," and cleaning boilers, a job so dreaded by engineers, and so expensive to employers.

Stilwell's Patent Heater and Lime Catcher is not an experiment but an established success, having stood the test of five years' use, on all kinds of water, and the rapidity with which it is being adopted by our most practical and scientific engineers, in all classes of establishments using steam power, is a most gratifying indorsement of its great value and utility. Many hundreds are now in operation in all parts of the country, and, thus far, not one has failed to give satisfaction—a record of which we are justly proud.

To prove to the most skeptical our entire confidence in its ability to accomplish all we claim for it, we will, in localities where it has not been introduced, allow any responsible party to take a Heater on trial, entering into an agreement with such party that in case the Heater fails to prevent incrustation, as warranted, we will receive it back, and make no charge for its use.

STILWELL & BIERCE,
Proprietors and Manufacturers, Dayton, O.



Improved Machine—Front View. Patented June, 1856 and 1860.

THE INGHAM OR CALIFORNIA WHEAT CLEANER, SMUTTER AND SEPARATOR, COMBINED.

MANUFACTURED AND SOLD BY M. DEAL & CO., BUCYRUS, OHIO.

This is a great improvement in machines for cleansing grain for flouring. It constitutes all that is required in a mill for that purpose, and saves the necessity of any other screens, fans, &c., as it does the whole at one operation, and with the utmost economy of grain and power.

All the offal, worth saving, is delivered from the machine free from dust and smut, and in a condition to feed or grind. It makes no dirt in the room where it is set, and may be put on the floor with the stones or bolt chest if desired, or wherever the convenience of the miller may dictate. In the following essential points it will be found to excel:

1. Thoroughly cleansing the grain without wasting it.
2. Simplicity and durability in construction.
3. Safety from fire.
4. Cleanliness and convenience of attending.

A riddle 18 by 38 inches, is placed on the top and vibrated by a belt connected with the fan shaft. The riddle removes long straws, rat filth, sticks, nails, stones, &c., passing off at the end of the machine. After passing this, the grain is conducted into an air chamber, up which a current of air is drawn by the fan, removing smut balls, loose dirt, short straws, &c, before entering the beating cylinder. It then enters the cylinder, which is open at one end, and has a perforated case on the under side. The fan draws in the air at the end, and out again through the hole in the case, carrying with it every particle of adhesive dirt or smut, as soon as loosened from the kernel, and prevents, immediately, any further contact of the wheat with the dirt. After passing to the other end of the cylinder, the grain is thrown out of the top side into another air chamber like the first, and blown again in the most perfect manner, which finishes the operation.

The balance of the offal passes down a lattice work in the receptacle, and escapes clean and free from dust from the bottom, the dust being drawn through the lattice into the fan and passed out of the mill. The machine has a valve in the rear side to graduate the current of air in the air chambers, to suit either heavy or light grain.

Simplicity and Durability of Construction.—The entire fan-case wings, shafts, and pulleys are made of iron, and each of its parts can be removed and replaced at pleasure, without marring the machine. The beating cylinder, and its surrounding cases, are made of heavy iron. The under half, which is perforated, is of heavy iron, and the upper half cast-iron. The under half is the only part of the machine that can possibly wear out; and to avoid the expense of continually buying new machinery, as is usual, this is so made as to be easily and quickly replaced with new ones, and at an expense not exceeding $5 for the smaller, and $10 for the larger size.

The riddles are made of perforated sheet-iron or tin, and will be found to last ten times as long as those made of zinc or wire cloth, besides being better for doing the work perfectly. The mouth of the fan-case can be turned to blow in any direction, so as to adapt it to any situation in a mill. By loosening a couple of nuts on the side of the iron girt beside the fan-case, it may be turned downward or outward.

Security from Fire.—The bearings to the shafts are supplied with composition boxes, and will run night and day, constantly, without heating. But for still greater security, the girts which support them are made of iron. With these safeguards, it will be readily seen that it is impossible for a fire to originate from them. In addition, the combustible material produced by a Smut Machine is entirely removed, instead of falling about the machine, and as the machine can be placed in an open room, and free of access, instead of being cooped up in a cockloft or cellar, and covered with dirt.

Cleanliness and Convenience of Attending.—Dust from a Smut Machine, scattered from top to bottom of a mill, we feel safe in saying is a great annoyance to millers In this machine, by attaching a spout to the mouth of a fan-case, the dirt is conveyed out of the mill, or to some convenient place of deposit, and thus the difficulty is entirely avoided, and the mill is kept clean.

This machine furnishes a complete, durable and systematic Cleaning Apparatus, and occupies a space of but four feet square, consumes but little power, and saves the multiplicity of gear which is required in the old system. It is neat in appearance, makes no dirt, and wastes no wheat. Unlike most other machines now in use, it does not scatter wheat and dirt in numberless places about a mill. It was invented and perfected in California in 1854, when the entire wheat crop of that State was badly affected with smut, and it was found entirely superior to all Eastern machines, for removing smut.

It does more work than any other machine, without consuming as much power. It is the most perfect scourer ever invented, being horizontal, and retains the grain longer than any upright scourer, consequently scouring more thoroughly than any upright machine can possibly do. It is adapted to cleansing all kinds of grain.

Specially good for Oats and Rat Filth.—Our riddle being thirty-eight (38) inches long, the wheat is conducted on to a smooth surface, and is evenly distributed by a feeder before entering the perforated part of the riddle, thus throwing the oats, rat filth, &c., on its side, and by this means carrying nearly all of it off in this way. This is a very important improvement not used by other machines.

Size of the Machine.—Six feet high, three feet three inches long, two feet three inches wide. Scourer—one foot four inches wide; total width, three (3) feet five (5) inches. This is easily detached from the main machine so as to go into ordinary doors. Main or driving pulley, six inches in diameter. Weight 600 pounds. Revolutions of small machine, 750 to 800 a minute, running towards the machine.

The mechanical construction is first class in every respect and warranted. If desired, we will keep the machine in perfect order and repair for fifteen years, for $10, although it will not cost half this amount.

PRICE AND CAPACITY.

Machine with capacity of 30 to 40 bushels per hour	$150
Machine with capacity of 75 to 100 bushels per hour	250

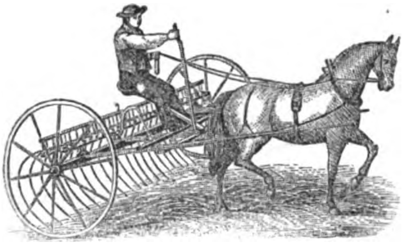
Warranty.—We sell the machine under a guaranty that it will do the following perfectly:

It cleans wheat perfectly without wasting any. It separates and carries off all straws, sticks, nails, rat filth, and every thing larger than wheat. It delivers all the chess, oats, hulls, seeds, or other foul substances fit for chopping, free from smut, dust or chaff. It dispenses with all other screens, fans, &c. It expels all the dust from the mill perfectly.

In corresponding with us, please state whether your mill is run by water or steam.

M. DEAL & CO., *Bucyrus, O.*

TAYLOR'S IMPROVED STEEL TOOTH HAY AND GRAIN RAKE.

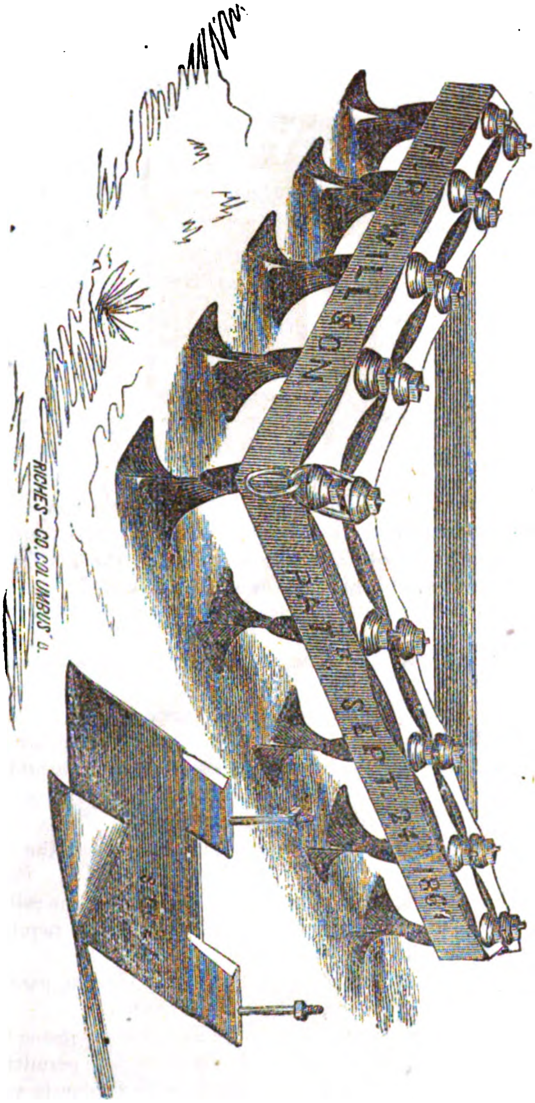


Patented May 22, 1866, *August* 6, 1867, *and September* 1, 1868.

The teeth are cast steel spring temper, of an oval shape, giving more strength than any round teeth can do of the same weight. Each tooth is perfectly independent, every inch is a spring, from one end to the other, and held firmly by a patent bracket with bolt from vibrating, and can be taken out or put in in an instant. A spiral spring over each tooth gives it a compound spring, and admits it to raise or lower, to accomodate uneven ground. Each spring is supported by a maleable spool with a stop inside, thereby making it a perfect independent steel tooth Rake. It can easily be adjusted by a single bolt to raise or lower the whole tooth-frame any required distance from the ground. It is easily taken apart or put together, a boy with one horse can rake from twenty to twenty-five acres per day, and save from one and a half to two bushels of grain to the acre; it has been thoroughly tested in raking hay, grain and oats into sheaves, corn stalks, flax stubs out of clover fields, and even brush on new ground, and proven itself perfect in every department, and therefore no experiment.

The first year, 50 of the Rakes were built; next, 100; next, 300; next, 600; next, 2,000; this year, 5,000; and arrangements are made for 10,000, for 1870. Such is its growing reputation that orders are received from twenty-one States and Canada; have shipped car loads to New Hampshire and Minnesota, while some go as far west as Oregon. In style and finish it stands unrivalled, and is considered the standard machine.

WILLSON'S STEEL-TOOTH EXPANDING AND SELF-ADJUSTING HARROW.

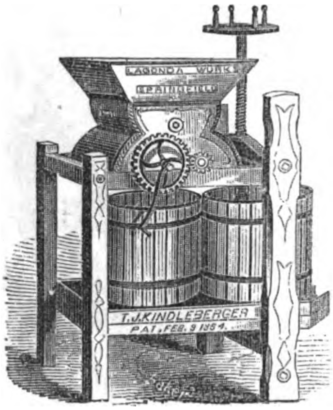


Manufactured by Wm. McDonald & Co., Columbus, O.

These Harrows have been thoroughly tested the past year, improved, and a second patent granted in June, 1868. For harrowing sod, or any hard soils, they have no equal; and we warrant them to leave the soil as mellow as a garden bed.

They cut the soil both vertically and horizontally; will cross-harrow the sod without inverting the furrows; are not liable to clog; entirely cuts off, lifts and pulverizes all the ground over which they pass; will expand or contract to suit the wants of the farmer; are made from the best German steel, and can be unbolted and sharpened by any smith.

THE IMPROVED BUCKEYE CIDER AND WINE MILL AND PRESS.



By the introduction of the portable cider mill and press, the inconvenient and laborious method of making cider has been superseded. The facility with which this mill is operated, and the expeditious manner in which the labor is accomplished, renders it the most desirable implement of the kind in America.

POINTS OF SUPERIORITY.

1st. The adjustable throat, adapting the grinding apparatus to all kinds and sizes of fruit.

2d. The adjustable grinding rollers, for same purpose.

3d. The metallic box, holding all parts of the grinding apparatus firmly in place, without liability of disarrangement from the swelling and shrinking of wooden sides and ends.

4th. The solid and compact frame for mill and press.

5th. The strong iron beam and screw, warranted to stand the severest pressure of the lever.

6th. The grinding apparatus, having the serrated ribs on one roller working against the straight ribs on the other, thus giving a shearing cut, and requiring a smaller consumption of power than with any other mill.

7th. The strainer board under the tub, allowing the cider to pass freely off from the cheese, and without which great loss in pressing is caused.

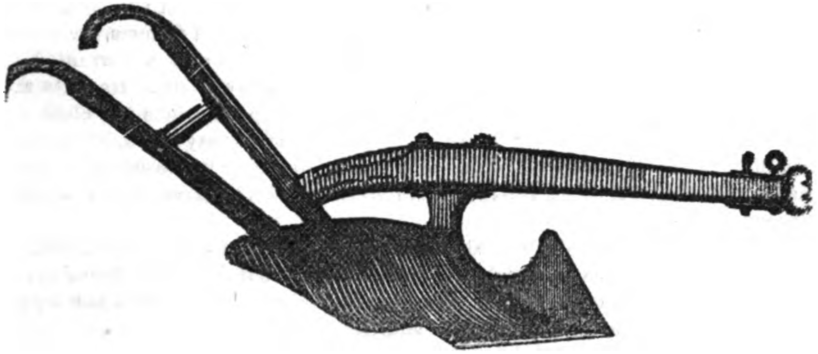
It has been very successfully used by a large number of persons in crushing grapes.

The position of the lower rollers can be changed, thereby permitting grapes to pass through without crushing the seed. This feature will render it very valuable where the farmer has a grape as well as an apple crop to take care of.

Manufactured by Warder, Mitchel & Co., Springfield, Clark county, Ohio.

THE RAKESTRAW AND HEFFELBOWER IMPROVED PLOW.

(*Patented October* 20, 1868. *No.* 83,206.)



This plow, as shown in the above cut, is so constructed that the shear and cutter will completely cut the bottom and sides of the furrow slice before the mould board is required to turn it over; and so arranged as not, under any circumstances, to clog, and, dispensing with the nose usually found upon plow points, forms, in connection with the peculiar construction of the mould board, a plow that cannot be surpassed in draft or execution by any plow yet made. It works equally as well in hard as in soft land, and combines all the qualities of a sod, stubble and breaking plow, and will work in clay, sand or mucky land. They can be made of cast iron or steel.

The draught of this plow at the Michigan State Fair for 1868 was 125 pounds in a furrow slice 7 by 11, stubble land, where other plows ranged in draft from 250 to 300 pounds, same size furrow slice.

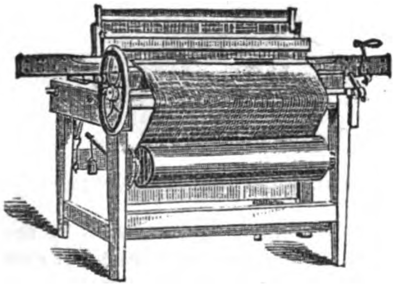
At the Ohio State Fair, September, 1868, it was, in sand 350 pounds, in clay 500 pounds; furrow slice 7 by 14 inches.

Wherever it has been tested it has not failed to give complete satisfaction, both as to quality of work and ease in draft.

Its cost is about the same as the average price of a first-rate steel plow.

Address, C. E. Bliven, Toledo, Ohio.

THE PEOPLE'S HAND LOOM.



This Loom possesses advantages in its simplicity, durability and the ease in which it operates. This loom has no treadles, cords, cog-wheels, spring triggers, harness and treadles, straps or jacks, thus dispensing with much machinery that is liable to get out of order, which has been the difficulty with hand looms. On the People's Hand Loom the harness are pushed up by a stop, and makes the shed as the batton comes forward. The filling is crossed by the warp before the batton strikes the cloth, and the warp is held open until the batton is thrown forward again, which is called the open shed. This loom is practically adapted to families of laboring men and farmers, for manufacturing all the heavy and substantial goods worn by them, and is warranted to weave as many yards per day as any self-acting hand loom now in use. Its parts are all self-changing, requires no skill to weave, it lets the warp off, winds the cloth up, makes the shed and throws the shuttle, all by the turning of an easy crank. The warp is drawn in but one way for all kinds, and is beamed the same as in the old loom, when the warp is once drawn through the reed and harness on this loom, on the same warp and without any extra machinery.

Shuttle and Bobbin patented. This shuttle is constructed in a way that the point of it, after entering the box, cannot stick up, which avoids the difficulty of flying out of the warp, and secures the filling from being caught between the shuttle and belge, which has been the difficulty with the other shuttles in making a good selvage.

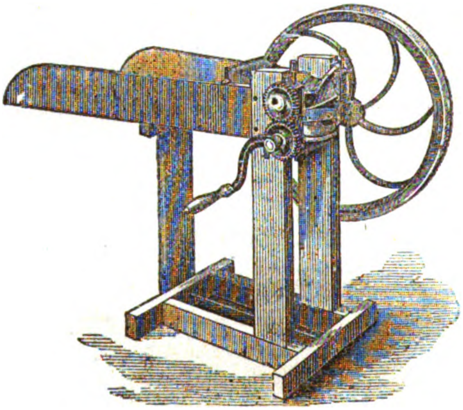
The bobbin or quill, is secured by a self-acting spring, so it cannot get loose.

Looms are furnished complete, including reed, heddles, shuttles, 50 quills, wraithe, lease rods, screw driver, oil can, wrench, heddle-hook, printed instructions, with cuts showing the different twills.

Present price of loom, (including all items named,) $80.00; one extra shuttle, $1.25; 50 yards chain on beam, $8,00; 100 yards chain on beam, $15.50.

Address C. Unverzagt, Terre Haute, Ind.

GALE'S COPPER STRIP FEED CUTTER, FOR CUTTING STRAW, HAY AND CORN-STALKS.



EXHIBITED BY G. E. HUTCHINSON, OF CLEVELAND.

This machine, as generally constructed, is represented by the above cut, showing three knives fastened by screws to stout flanges on the lower cylinder, which is geared to an upper cylinder, armed with three flanges faced with thick strips of copper, against which the knives cut. The knives and flanges are made of spiral form, so as to work with a smooth, steady motion. The feed to be cut being placed in the box, within range of the cylinder, is caught by the knife below and the copper-faced flanges above, and is drawn forward (with an easy, shearing motion) and cut off as the two meet, thus making a perfectly self-feeding machine, without the aid of separate feed rollers.

By making the upper cylinder with flanges to cut against, instead of a roller, a volume of feed three to four inches deep will pass through without clogging and work easily by hand power, thus saving a great amount of labor that in most other self-feeding machines is consumed in dividing the feed in thin parcels before presenting it to the knives. The flange feature also allows the largest stalks to go in, which are cut as fast and easy as the same weight of straw. The length of cut feed is governed by the diameter of the cylinders and the depth of feed allowed to pass to the knives, and not by the number of knives or the distance apart.

A machine constructed on this princple, with one knife, will cut just as short as one made with several knives, other circumstances being the same; as no more feed can be drawn into the machine than the knives and flanges can grasp and cut, they do not clog, and hence the smallest machine may be run by horse power without fear of breaking.

The copper strips are found by experience, to protect the knives so that they will generally keep in order and cut perfectly for years without grinding, and will last full ten times longer than knives arranged to shear against an iron or steel bar. As each knife strikes on the copper strip, in a place of its own, it soon becomes adapted to the edge of the knife, and consequently the copper does not soon cut out, in fact will generally outlast most other parts of the machine. Both coppers and knives if ever broken, or worn out, can be replaced for a few cents each, and put on and fitted by any one at home. All parts of the machine are made on the interchangeable plan, so if any part is ever broken or worn out, it can be replaced by a duplicate piece sure to fit.

There are thirteen sizes of these machines, some made with one knife, others with two and most with three; some sizes are made to cut very fine, other sizes are made to cut two inches long, to meet the views of more progressive agriculturalists, who prefer to cut feed (especially stalks) this length, to prevent the animals from swallowing without proper mastication.

These Cutters are retailed at from $12 to $22, for ordinary sizes; the smallest of which will easily cut a bushel per minute when turned by one person. Large sizes are sold at $26 to $45, and are more especially for horse power and will cut from thirty to one hundred pounds per minute, but also cut rapidly by hand power. These machines are sold on the express condition that they shall, in all respects, work as represented, and need not be paid for until tried and found satisfactory.

THE "BLACK PRINCE" COOKING STOVE

IS MANUFACTURED BY WOOLSON, HITCHCOCK & CARTER, CLEVELAND, O.

It is a stove of superior finish and capacity and beauty of design, and the castings are heavy. It has been constructed with great care, to meet the wants of all classes. It burns coal or wood with equal facility, and without change of grate. This is an important quality in many situations, and one which is possessed by no other stove in an equal degree. The oven has very perfect ventilation, and bakes quickly and evenly with very little fuel. The flues and ash-pit are large, and the draft is sure and strong.

It is beginning to be understood that the best cooking stove is the cheapest—the daily saving in fuel from improved construction. and of raw material through perfect cookery, producing this result with certainty, besides giving better health and a happier home to all who desire it.

DIRECTIONS.

The construction of the "Black Prince" is so simple that few directions are required

It is necessary to the good operation of a cooking stove that care should be taken in setting it up. The pipe should be nicely fitted into the chimney, as well as tightly fitted to the stove. See that the pipe does not project too far into the chimney.

When about to kindle a fire, take off a griddle and open the front doors so that you can see that the grate is open and clear; turn down the damper near the pipe, so the smoke will pass directly into the same;, when you have put in the kindling replace the griddle.

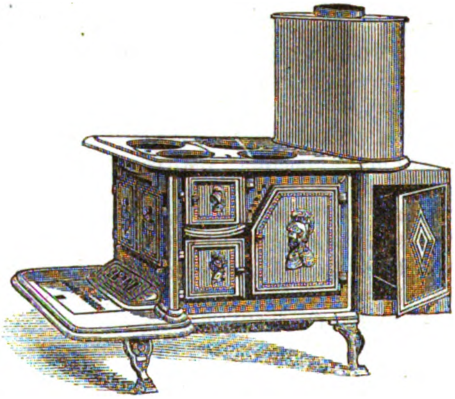
When you desire to bake, turn the handle of the damper upward.

The fire box should net be at any time full of fuel—never above the line of the oven top. More than this is waste and an injury to the stove and to its operation.

To check the fire, turn the grate bars down so as to close the openings between them.

This is done by turning the winch which works the grate, to the right.

To dump the grate, lift the winch a little upward and to the right, when a turn to the left places it bottom upward.



HOW TO BURN ANTHRICITE COAL.

There are few who attempt to burn coal in a stove who do not waste nearly as much as is necessary to be consumed to obtain all the heat desirable. The following simple directions will be found useful in the management of an anthricite coal fire:

First.—To make a coal fire, put in a double handful of shavings, or use kindling wood instead. Fill the fire box of the stove half full of sticks of dry wood, say four or six inches in length. On the top put about a dozen lumps of egg coal. In ten minutes add about twenty lumps more of coal As soon as the wood has burned out, fill the fire box two-thirds full of coal, and the fire will be a good one.

Second.—Never fill the fire box more than half or two-thirds full of coal, even in the coldest weather.

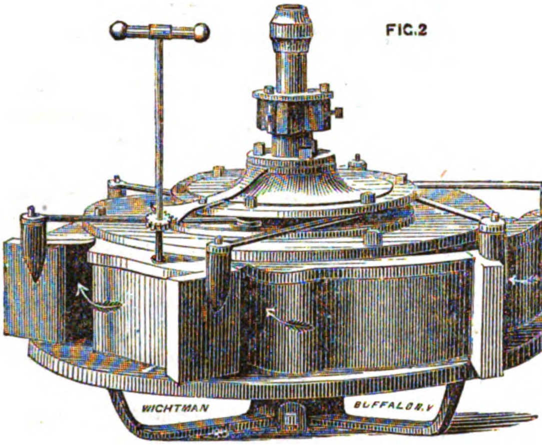
Third.—When the fire is low, never shake the grate or disturb the ashes, but add from ten to fifteen small lumps of coal and open the draft. When these are heated through and somewhat ignited, add the amount necessary for a new fire, but do not disturb the ashes yet. Let the draft remain open until the coal is thoroughly ignited, and then shake out the ashes, and the stove will keep at a high heat from six to twelve hours, according to the coldness of the weather.

Similar treatment is also suitable for bituminous coal.

This stove will burn slack coal in the most perfect manner; but coal of a nut size will make a hotter and quicker fire. It is well to have a supply of each kind, using the slack to check too rapid combustion.

AMERICAN TURBINE WATER WHEEL.

FIG. 2



MANUFACTURED BY STOUT, MILLS & TEMPLE, DAYTON, OHIO.

These wheels and cases possess important features in the application of water. There are six to twelve graduated shutes on each wheel, depending on their diameter; each gate and shute is cast in one piece and move horizontally, the shutes being hinged at a point near the inside of the case or point of depletion; thus, as the gates are opened or closed, the shutes move with the gates, so that, whether they are fully or partially opened, the shutes are always adjusted to suit the amount of water admitted through the gates; therefore the wheels produce as high per cent. of power with partial as with full gate. The gates are easily opened and closed by a ring and levers, operated with a segment and pinion, as shown in the cut, and are operated most admirably with a governor. These Turbine Wheels are not only the leading wheels of the Western States, but large numbers are also in use in the manufactories of the New England and Middle States, and on account of the economy in the use of water, durability and steadiness of motion, are preferred to all other turbines. Descriptive catalogue sent on application.

SPRAGUE'S BUCKEYE BRICK MACHINE.

The machine is what is styled a Wet Clay Brick Press, the clay being wet and thoroughly tempered before going into the moulds. The clay is put into the tempering tub (which is directly over the press box), when it is thoroughly mixed by the revolving knives in the tub. It then passes down into the press box, and by the means of the revolving cam press the clay is pressed into the moulds, making six brick each revolution of the press. The moulds are sanded, same as for hand moulding, and placed on the table, back of the press box; then, by a simple arrangement in connection with the press shaft, the moulds are shoved under the press box and at the same time the full mould discharged, ready to be taken on to the yard and dumped.

What we claim for the Machine.—1st It is not complicated, and if properly put up, will run a whole season without repairs.

2d. An engine of twelve or fifteen horse-power will run the steam machine.

3d. The clay is put into the steam machine direct from the bank, and wet while being ground and tempered.

4th. The clay is pressed into sanded moulds, and the bricks are spread on the yard to dry. The clay is worked very stiff, consequently the brick can be baked much sooner than ordinary wet clay brick.

5th. The knives in the mud-box make two revolutions to each mould of brick turned out, insuring a perfect tempering of the clay.

6th. The steam machine, with the labor of eight men and one boy (after the clay is delivered to the machine), will make forty thousand brick in eight hours.

7th. The horse-power machine is easily worked by two horses, and with the labor of seven men, will make twenty-five thousand brick per day.

8th. The clay requires soaking in a pit before being used in the horse-power machine.

9th. There is no danger of breaking moulds, as it is impossible to put one in so as to break it. The screen over the press-box prevents stones or roots from getting into the moulds.

10th. The pressure is governed by the amount of clay let into the press-box, and can be done without stopping the machine.

11th. The bricks made by the machine are very compact, and have well defined edges and corners.

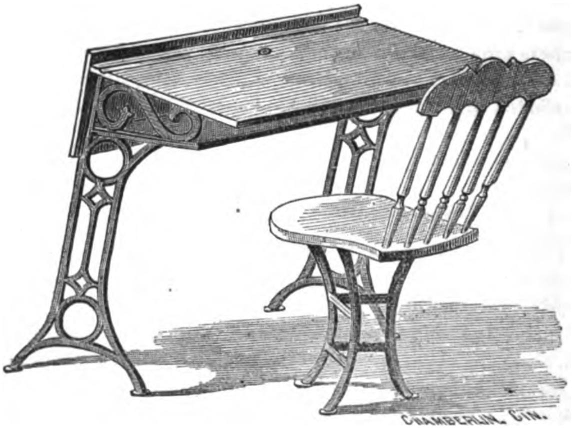
12th. The machine is seven and one-half feet high, and occupies a space five feet square on the ground. Weighs about 4,000 lbs.

☞ We warrant the machines to perform all we claim for them, and to be in every particular as represented.

PRICE.

Steam Machine and yard right	$750
Horse-power Machine and yard right	600

SINGLE GRAMMAR DESK.


CHAMBERLIN, CIN.

The peculiarities of the school desk and chair represented in the accompanying engraving are as follows:

The desk is supported by iron stanchions, placed at such an angle with the floor that the traction is directly in line with the screws which attach it, instead of at an acute angle, as usually made—thus avoiding the leverage which so soon loosens the desk from the floor. The top of the desk is inclined 7½ degrees from the horizontal—the best angle for reading or writing.

The chair is supported by Cole's patent tripod pedestal, which, by reason of its form, is elastic. This elasticity allows the whole chair to yield slightly to backward pressure, avoiding that disagreeable and injurious shock consequent upon leaning quickly back in a chair with rigid pedestal. It also breaks the leverage, and prevents direct wrenching upon the screws by which the pedestal is fastened to the floor and to the chair.

The best educators uniformly recommend the single desk and chair as the best that can be put in the school-room, since it gives each scholar a domain of his own, which cannot be encroached upon by his neighbor without a movement sufficient to attract the attention of the teacher. It secures individuality of scholarship, and removes both the incentive and the excuse for communication.

In the chair under consideration a proper inclination of both seat and back is secured, so that the pupil can sit erect and yet attend to the books upon the desk. Seven sizes of these desks and chairs, adapted to persons of every age, are made by the exhibiters, Cole, Nelson & Co., Cincinnati, O.

DESCRIPTION OF TIFFANY PATENT DRAIN TILE MACHINE.

This machine was patented in 1861, and has from time to time been improved, by increasing its strength and changing its form, for the purpose of rendering it proof against liability to break in the working of all kinds of clay, and the better adapting it to the application of steam power.

The machine is so well represented in the engraving that a full description is unnecessary. It is made wholly of iron, and weighs, complete, 3,300 pounds. On the mill or grinder shaft are arranged spirally short, broad knives, and to the lower end of the shaft is attached a larger screw-beater. Immediately beneath this screw, placed horizontally and parallel to each other, are two spiral conveyors or augurs, of the form represented in the engraving. (In making the larger sizes a single augur of larger size is used.) The pulley at the back end of the machine, and the lever cap on the top of the mill or grinder shaft, adapt it to either horse or steam power.

The clay is thrown into the mill, and by the action of the knives and screw is ground and pressed into the augurs, and by them is forced through the dies.

The machine may be run at any desired speed by steam power, and will mould pipe as rapidly as they can be removed by the workmen. The tile are as compact as a pressed brick, and so firm that they are removed from the rack by the hand without injury. The stones gather in the space below the augurs, and are removed through a trap-door in the bed-plate.

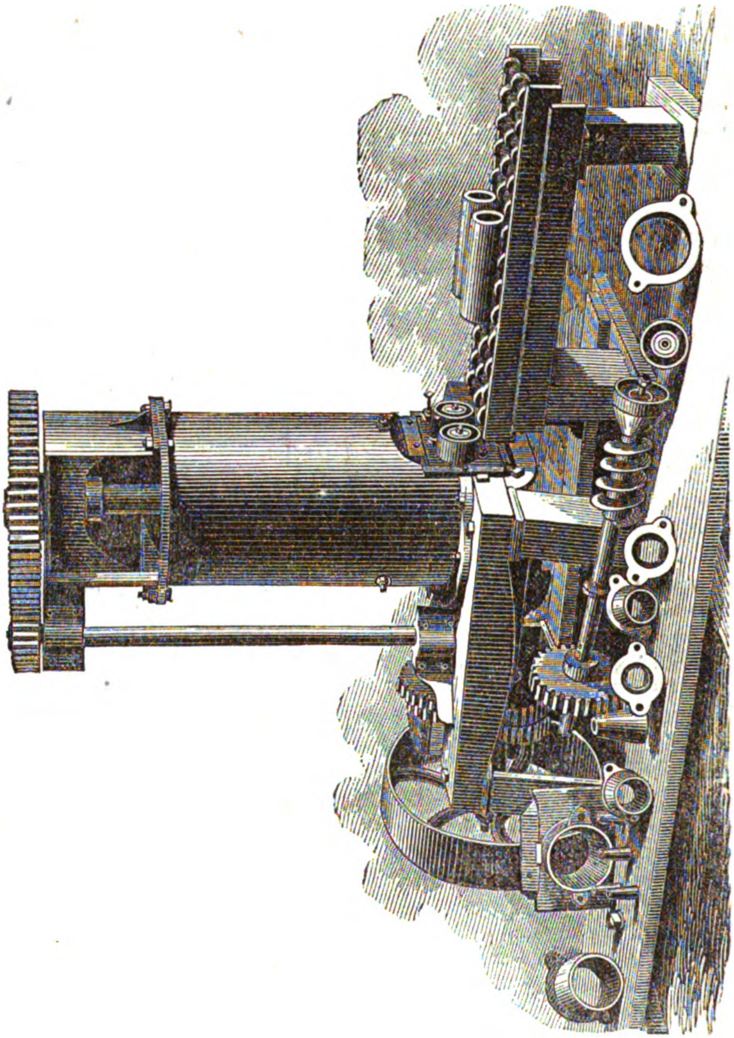
By the use of the augurs, the form of the dies, and the arrangement of the core-pins in the end of the augurs, several important advantages are gained:

1st. The pressure is applied to the clay at the die upon an area but little more than a cross section of the pipe.

2d. We dispense with the bridge or bracket used in other machines to support the core-pins, which bridge or bracket divides the clay just before it enters the die, and necessitates the use of very soft clay, or renders the tile liable to crack in burning. The difficulty of uniting two bodies of clay without an excess of moisture or a kneading process, has defeated many designs for clay-working machinery.

3d. The rotary movement of the core-pin as the tile issue from the die, produces the same effect as when, in smoothing with a knife any plastic material, we give the knife a slight movement in the direction of its length, as well as a lateral movement. By this process the tile have a much smoother surface than could be given them on a potter's wheel. "This is the main point to be attained in the making. A rough inner surface collects detritus, which eventually clogs and stops the ordinary tile."

On account of the ability of this machine to work very stiff clay, less shed-room and shelving is required. In many places no shelves are used, the tile being placed on a smooth sand floor. They dry soon and are less liable to warp in drying, burn more safely, and have a harder body when burned. Each machine is provided with a rack on which the tile run as they issue from the dies, and to this rack is attached a cut-off so constructed as to cut the tile at right angles and of uniform lengths.



This Machine is manufactured by H. Brewer & Son, Tecumseh, Mich.

WOOD'S SELF-RAKING REAPER AND MOWER.

Manufactured by Remington Agricultural Works, were exhibited by F. C. Goff, of Cleveland, O.

The peculiarities of this Reaper consists in the rake being worked by a pitch cham, which margins the platform and carries the front end of the rake around the platform, the back end being supported by a double-jointed guide. Its action is simple, and the power applied direct, without loss of leverage. The rake, by a simple and rapid motion, grasps the cut grain at the butts and sweeps it across the platform, making a perfect separation from the falling grain without entangling or scattering the straws; raking off short grain as well as long. The separation being effected, the grain is compressed in a compact and regular gavel against the wing board, and delivered at the side of the machine in better shape for binding in all cases, than can possibly be done by hand, and entirely out of the way of team in its next round.

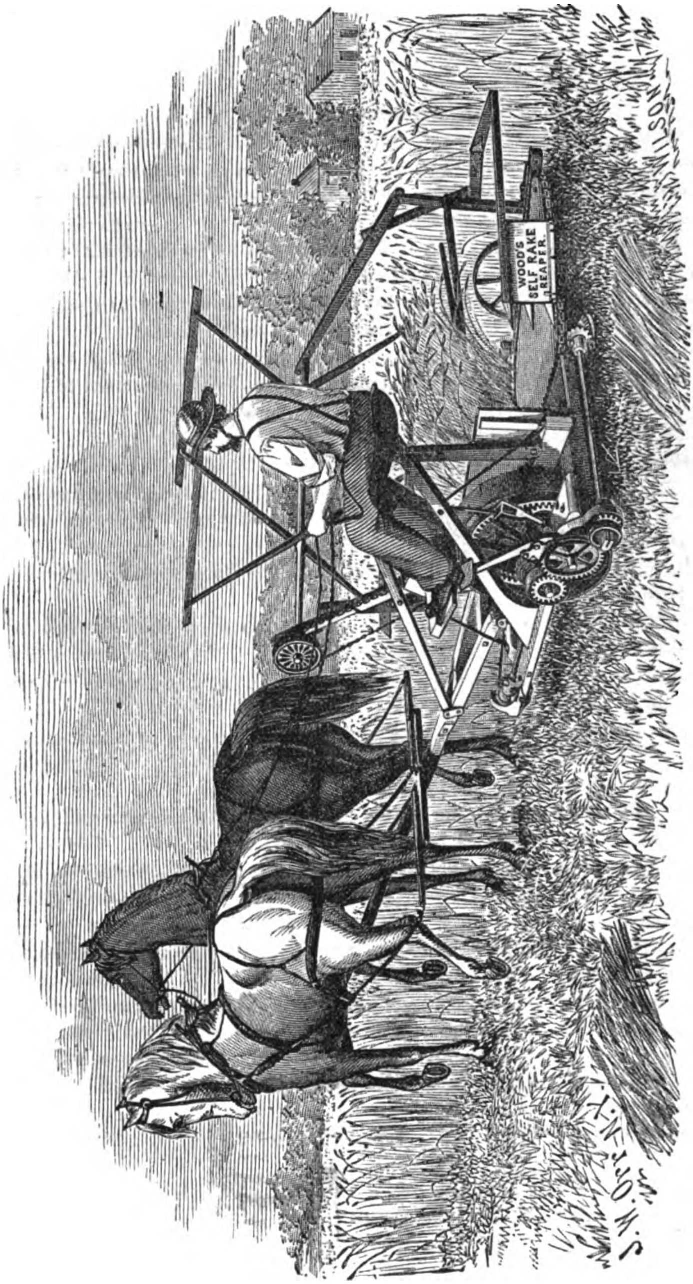
The driver is seated in the rear of the cutters, where he may watch their operation without any fear of being thrown into them. He also, by a movement of his foot, can regulate the size of gavel without any change for light or heavy grain.. This is indispensable in a proper Self-Raker.

This machine being so perfectly balanced on the axle, is easily raised or lowered by means of a lever, which is always under the control of the driver, however weak or small he may be. This enables him to save all lodged grain. From its peculiar construction, all side draft and weight on horses' necks is entirely removed. The weight of Reaper is 875 pounds, and its direct draft in ordinary grain at previous trial has been from 175 to 225 pounds.

A correct idea of these machines, we are satisfied, cannot be had, unless seen at work in the harvest field, and then the simplicity and ease in the operation of the jointed arm of this Self Rake, while it has full command of the grain, never fails to command the admiration of all.

The Self-Raking Reaper, as used in mowing, can be seen in annexed cut, as shown on the road.

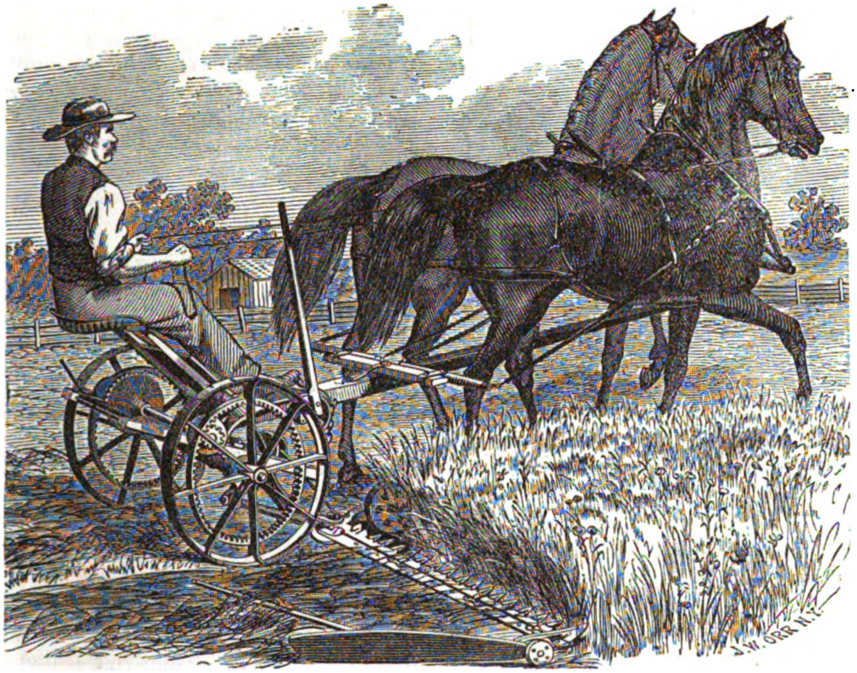
The position adopted by Mr. Wood, in the beginning of his experiments, was that no one machine, with same gearing and cutting bar, can be made to do equally good work in grass and grain. In one or the other place it will come short. In this, nearly all intelligent farmers now agree. In reaping, a slow motion and light, but firm cutter bar is required, because constantly carried above and not on the ground. In mowing, a quick motion and flexible cutter bar is required, to follow the uneven surface of ground on which it is running. That they may accomplish this, and furnish a machine that shall do both kinds of work to satisfy all, they furnish for mowing, a separate frame, gearing and cutting apparatus, giving to the mower a quick motion with flexible cutter bar, making it necessary to take from the Reaper only the drive wheel, grain wheel, seat and pole, with hounds attached. The only difference between single and combined Self-Raking Reapers is, a mowing attachment accompanies the former to make it combined.



WOOD'S SELF-RAKING REAPER.

WOOD'S PRIZE MOWER,

Which is shown at work in the accompanying cut, will be remembered as the one to whom, after perhaps one of the severest trials ever given this class of machines, was awarded, at the Paris Exibition, the grand gold medal, and the championship of the world. This fact alone, will make a description of it interesting to those perusing this Report.



Its frame is made of wood, in quadrangular form; is framed closely and secured by draw bolts passing through both ends of the same, giving the best possible bearings and greatest strength with least weight; the whole is hung upon the main axle in such form as to raise itself over rough and uneven ground, aided by the main or jointed shoe, working in a loop, which passes over the main axle, and in front is connected to frame by a spring steel extension piece, thus throwing the strain against the axle, instead, as is usual, against the frame. The raising of this shoe in the loop, when the cutter bar strikes so solid against obstructions as to stop the team, saves the machine from the strain and breakage usual to other machines under such circumstances. It is a point which can be found in no other machine. This, with other like peculiarities, enables us to give the farmer not only a machine of much lighter draft, but at the same time much stronger than many of twice its weight, it being but five hundred and seventy pounds. From the construction of this shoe, we have a light and durable joint, the bearings of which are nicely turned and fitted. When you come to examine this compact and close-fitting joint, you will see the difficulties usually found in jointed mowers, which cannot exist in this, viz: The looseness of joint allowing the cutter bar to drop back, throwing pitman out of line, causing much friction, increase of draft and breaking of knives.

The guards are of malleable iron, plated on cutting surface with steel, which plates are firmly set and rivetted, removing all danger of loosening. The closing of the guards at the shoulder adds much to the strength of the bar, and affords greater protection for the knife in stony ground. Being attached by a single bolt, can readily be removed and replaced by any one without delay. Wheels are placed in both shoes for regulating height of cut. A spring seat, placed in the rear of the cutters, affords a safe and easy seat, enables the driver to watch their operation and prevents the possibility of being thrown into the cutters and by them maimed for life A lever is placed at the driver's right hand, by which he can readily raise not only the finger bar and cutters to pass obstructions, but by the balancing of the frame on the axle, readily raise it to the same height of bar, and that too, with no weight on the horses' necks. By the attachment of the pole to same casting receiving seat, it is entirely independent of frame, is so adjusted as to neither give side draft or throw weight on horses' necks, whether at work or in being transported from place to place with bar folded.

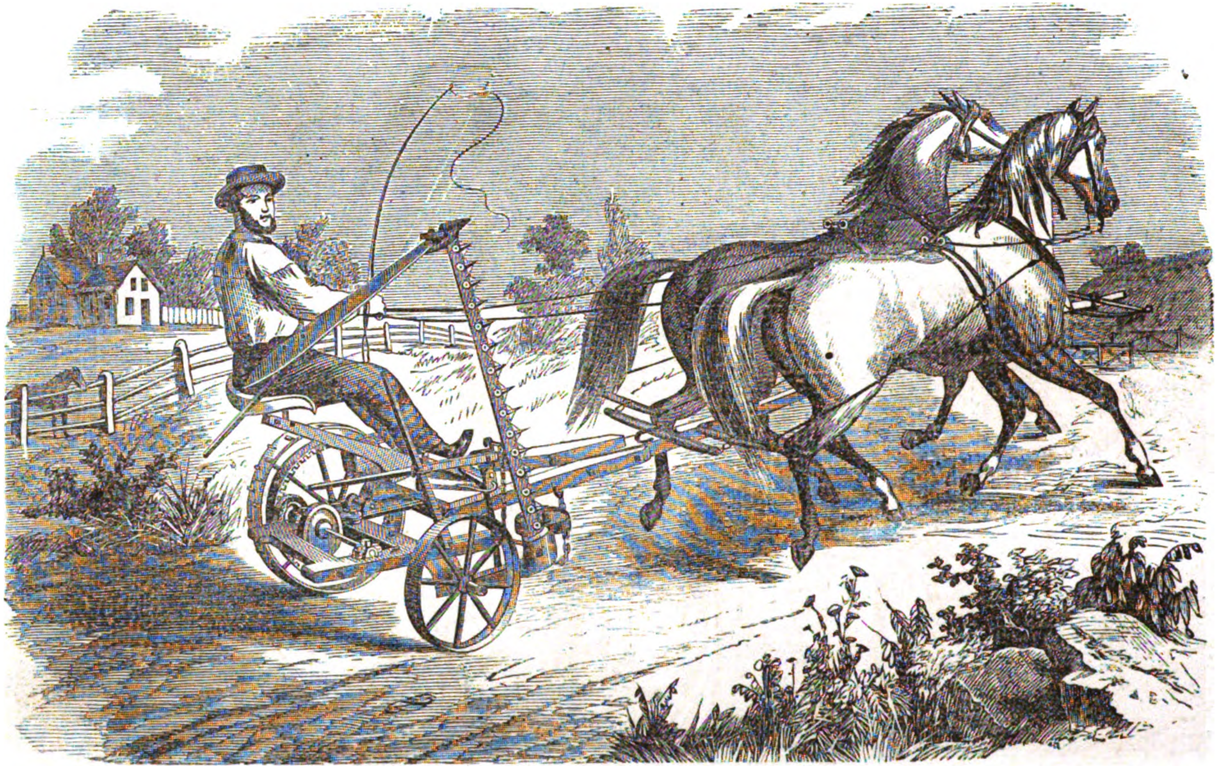
For further particulars regarding these machines, address F. C. GOFF, Cleveland, O.

THE WORLD'S MOWER AND REAPER,

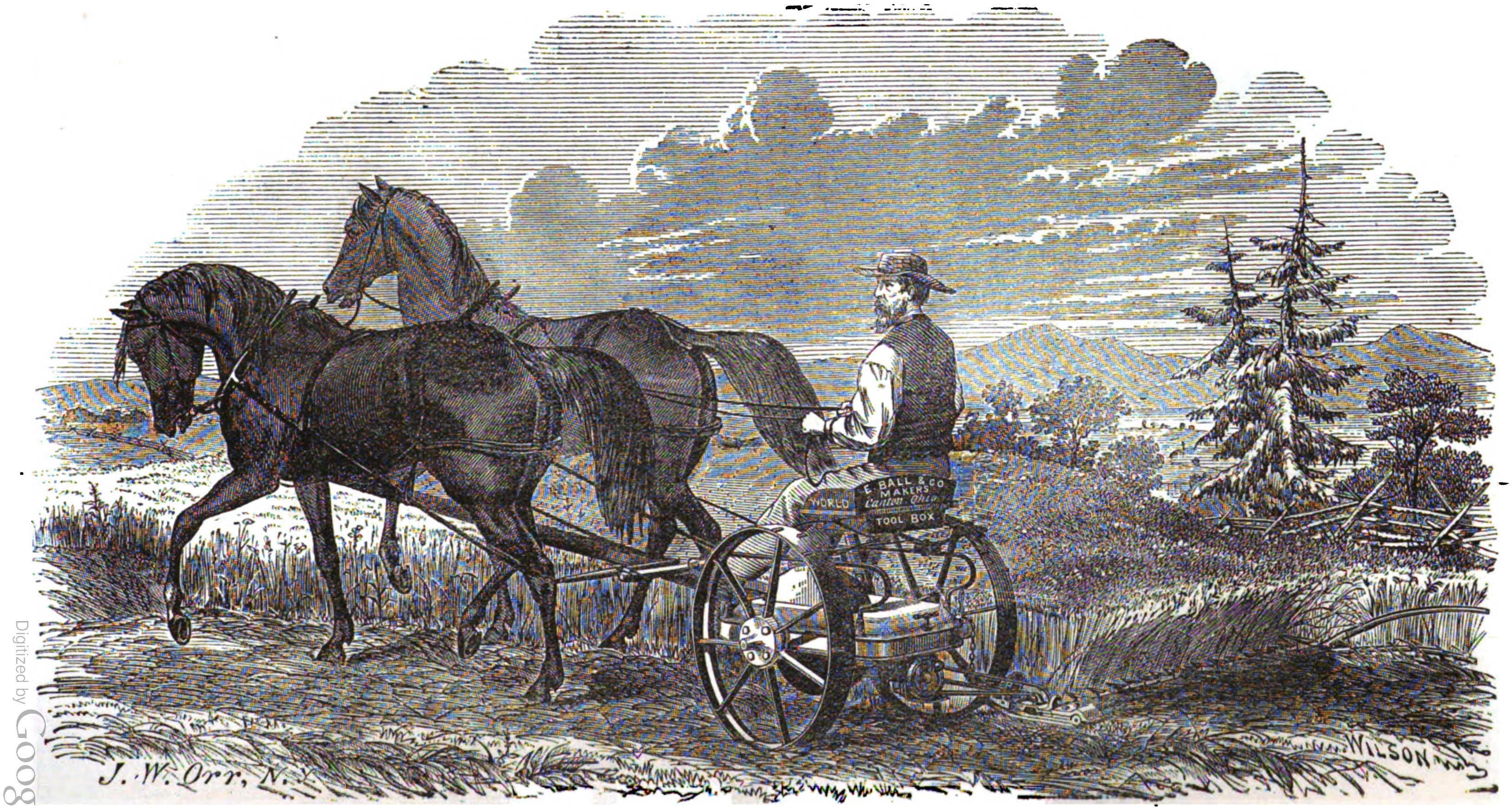
Manufactured by E. Ball & Co., Canton, Ohio, was awarded the first premium as a "combined Reaper and Mower" at the Society's late exhibition. It differs essentially in its mechanical construction from all harvesters in use. The gearing, instead of being cast, as is ordinarily the case, is cut from solid blanks, every wheel and cog being formed with the most unvariable and faultless accuracy, by means of powerful and elaborate machinery, invented and built expressly for the purpose, by the manufacturers. The shafting is prepared with the same careful regard for exactness and the sheets fitted to them in the most substantial manner. The frame is a solid iron case or shell, into which the bearings are cast, and with their caps babbitted. By this arrangement perfect security against lateral strains is effected, and the machine is enabled to pass over the most uneven surfaces without danger to the gearing. The adjustment of the gearing is in keeping in respect to permanency and regularity with the high standard observable in other features of the machine. A closely fitting hinged top with the lower case protects the vital parts of the machine from dirt, water and every other external cause of disarrangement and decay.

The World is built as a single Mower; as a Mower and Reaper, with Dropper; as a Mower and Reaper, with Hand Rake and Dropper; and as a Mower and Reaper, with Johnson's Self-Rake. The attachments are gotten up with materials which experience has proven to be best adapted to this purpose, by skilled workmen and embrace the latest improvements.

For engraving, see page 154.

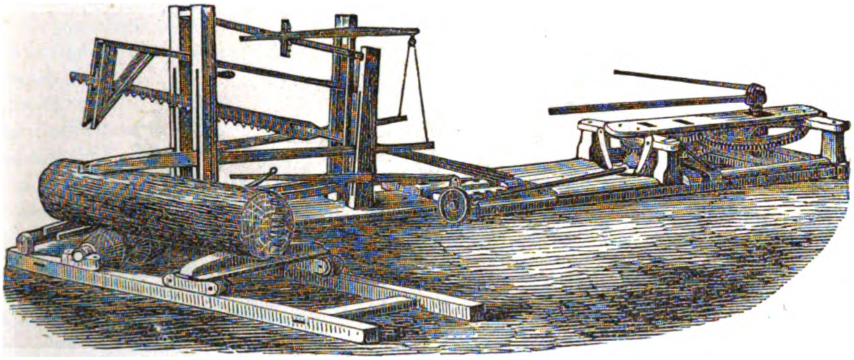


WOOD'S MOWER FOLDED FOR TRANSPORTATION. (See page 151.)



THE WORLD'S MOWER AND REAPER. (See page 152.)

THE BUCKEYE SAWING MACHINE—CIRCULAR AND CROSS-CUT MACHINES COMBINED.



MANUFACTURED BY J. W. BOSTWICK (FORMERLY WHITE & BOSTWICK).

The above cut represents the "National Buckeye Sawing Machine," including the horse power. The sawing machine, as shown, is for sawing railroad and stove wood from the log; is very simple in construction, and efficient in use. One feature of superior merit is its saw guide and log holder, enabling the operator to hold securely any stick from five feet to two inches in diameter; cutting any lengths, down to five inches; working equally well on knotty or uneven logs, and requiring but one man to tend and one pair of horses to run it; cuts, ordinarily, thirty to fifty cords per day.

The horse power, with the sawing apparatus detached, shows its shaft and pulley for any kind of circular work. Its great superiority is in its always being in line, as its shaft and driving pulley are a part of the machine, running equally well at any angle, and is ready to drive anything that can be driven with four horses.

In connection with the saw table is attached, if ordered, a boring machine, for boring fence caps, picket rails, etc., running any sized augur or bit; price extra, $15. All of the work is warranted against defects.

STATE FAIR, DAYTON, O., Sept. 27, 1867.

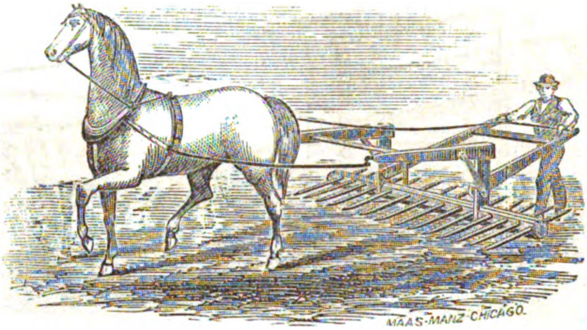
Your committee on Agricultural Implements in this division beg leave to report that in the department of wood sawing machines, both cross-cut and circular, and also of sweep horse powers, there has been a very spirited, though gentlemanly, competition. This class of machines of our State has attained a high degree of perfection, and stands at the head of these annual contests in other States. We have spent one entire day in this department, and have tested the capacity of the sawing machines by personally tending them ourselves, and must award the first prize—a silver medal—to the Buckeye, patented and exhibited by White & Bostwick, of Norwalk.

The same horse power used in sawing was entered by them as a power for general use; and we must say that it has advantages over any other power that we have ever seen operate. The shaft that gives circular motion is always in line with the power, standing at any angle or at any elevation, and is so easily changed or thrown off that it renders it eminently practical for all farm use. We tested the draft fully with the team and also by hand, and found it all that could be desired, and awarded it also the first prize—a silver medal.

J. A. FIELD, Marion,
C. S. GATES, Cuyahoga,
A. A. JEWETT, Cleveland,
Awarding Committee.

J. H. Klippart, Cor. Sec. Ohio Board of Agriculture.

HUBER'S PATENT HAY-RAKE.


MAAS-MANZ CHICAGO.

(*Patented January* 24, 1865.)

This is a new and improved revolving hay-rake, provided with two metallic springs to handles, to catch on plates fastened on teeth and head. The handles are fastened to pendants with a pivot bolt; by this arrangement the rake can be moved and held in all directions in a stiff and steady manner. To discharge its load the handles are slightly raised. The springs will work back on plates and loosen their projections and allow the rake to turn over and catch again as before. The working part is all in the rear. It has nothing to interfere with the hay; allows a full load, while it has the full length of the teeth. The whole arrangement is extremely simple, durable and compact. No chance to get out of order while the springs draw against each other. The rake also can be folded, the handles can be laid in thills with teeth to range, and can be carried from place to place, or through gates or doors, without any inconvenience.

Address, Edward Huber, Marion, Ohio.

BLAKE'S ENDLESS PLANK HORSE POWER.

Blake's Endless Plank Horse-power is constructed on a new, novel and simple principle, saving by its peculiar construction a large amount of friction—thereby adding largely to its capacity to transmit power, over any other machine in use.

It is generally known that the tread powers heretofore made, carry their apron, upon which the horses travel upon small rollers of about three inches in diameter, which run at high speed and reverse motion, twice at each revolution of the apron, which necessarily causes great friction, as will be evident on a moment's examination and calculation. At a travel of two miles per hour of the team, the apron will make on an average, seven revolutions per minute; each little wheel, therefore, reversing motion fourteen times per minute, which is eight thousand four hundred times every ten hours; and this has to be kept up by about sixty rollers—which is equal to one roller reversing—five hundred and four thousand times per day, in addition to its ordinary rotation and travel.

This great and constant friction has the effect to flatten the outer rim of the roller in spots, which of course retards the ease of its reversal, causing it to slide upon the way, at times, and these rollers being kept in perpendicular by guide-boards, it will readily be seen that, as soon as the journals begin to wear, they are permitted to lop from side to side and rub the guide-board, above and below.

The construction of Blake's Horse-power obviates all this objection and trouble, as you will see. In the place of some sixty little rollers, as before stated, used in the other powers, the apron in Blake's Power runs on four drums, eighteen inches in diameter, rotating slowly, always one way and in fixed journals. You will at once see the great advantage there is in the working of this power, and of its great simplicity.

The apron is made in segments or sections of plans, two feet long, running lengthwise of the apron, grooved in such a manner that horses shod in the ordinary way will not slip, giving a plain, even surface for the horse to travel on, and insuring an easy and natural position for the foot at all times; this manner of construction adds full one hundred per cent. to the wear of the apron. The ordinary way of construction, is in narrow logs, running crosswise of the apron, the corners of which soon wear off, allowing the horse's feet to slip from log to log, affording an unnatural, uneven and fatiguing hold, tiring and straining the ankles of the horse.

The tension of the apron is one and the same at all times and at all points, in its circuit, consequently no power is lost, and prevents the constant jerking or vibration, incident to an apron or belt which has an uneven or irregular tension. There are no chains or links in this apron, and it is so simple that any farmer can put in a new section or apron, as his necessities may require.

In both the two and the three horse powers, each horse has his separate apron to travel on, applying directly to the work the power obtained by each horse.

Unlike all other machines, every bearing may be oiled while the machine is in full motion, as every journal is stationary, and with a saving of full three-fourths of the oil generally used.

These machines are adapted to all the ordinary uses of threshing, sawing wood (with either the circular slitting or cross-cut saw, or the drag cross-cut saw), feed cutting, water or grain elevation, running light machinery in wagon or chair shops, &c., &c.

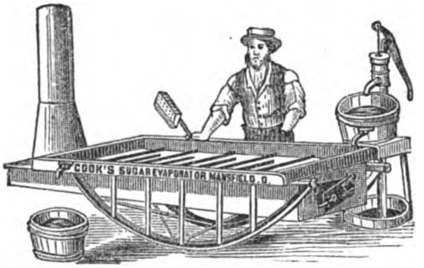
Illustrated circulars sent on application.

Price of One-horse Machine	$140
Price of Two-horse Machine	175

Manufactured and for sale, wholesale or retail, by

SHAW & WELLS, *Buffalo, N. Y.*

COOK'S EVAPORATOR.


COOK'S SUGAR EVAPORATOR MANSFIELD, O.

Manufactured by Blymer, Day & Co., Mansfield, O.

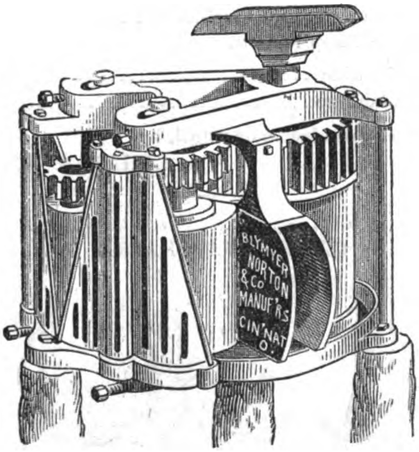
The Cook's Evaporators are extremely simple, economical and effective, and are constructed and operate upon a principle entirely different from that of the ordinary boiling arrangements. They consist of pans of sheet metal—galvanized iron or copper—with ledges projecting from the bottom at intervals of about six inches, so as to make a continuous transverse channel from one end of the pan to the other. Through this channel the liquid flows in a shallow, unbroken current, being received at one end of the pan in a steady stream of raw juice, and passing out in from twenty to thirty minutes at the other, in as steady a stream of finished syrup.

By this arrangement the surface of the pan is separated into as many compartments as there are ledges, and the liquid is clarified more than is possible in open pans; while, at the same time, there being but a small amount in the pan at once, and that spread over a large extent of fire surface, the evaporation is more rapid, and the defecation is better than is attainable in any other way.

Of these Evaporators there are two series—one, portable, the pan being mounted upon a light iron furnace; the other stationary, the pan resting upon a brick arch. In the former. the flow of juice through the pan is regulated by rockers; in the latter, by means of high ledges and gates.

These were among the first of Patented Evaporators. They were received with favor upon their first presentation, and the test of years has verified the correctness of the impression they then made. Over seventeen thousand are now in use. They have been awarded the first premium at every National, and at sixty State Fairs. They have been worked at nine State Fairs in Ohio in succession, and no competitor has received a premium over them. Their range is co-extensive with the growth of sorgho, and they are rapidly acquiring an equal reputation throughout the sugar districts of the South and of other countries, for the manufacture of sugar from the tropical canes.

THE VICTOR CANE MILL.

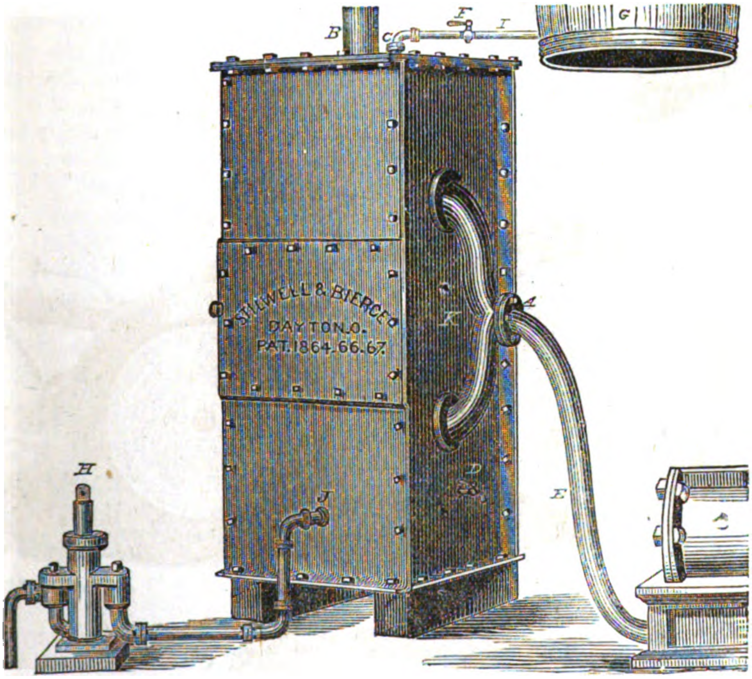


Manufactured by Blymer, Norton & Co., Cincinnati, O.

The Victor Cane Mill, of which there are two series—one vertical and portable, adapted to horse power; the other stationary, with rolls arranged horizontally, and driven by steam or other detached power—embraces no less than nine distinct and patented features, which render it, in all essential qualities, a peculiar mill. Its first form was under the old Hedges' Patents—among the first patents issued upon this class of machinery. To these were afterwards added those of James, of Edgerton, of Clark, and following these, the further improvements of the present manufacturers. In 1863 the mill had attained, in the main, its present form, and then assumed the name by which it has since been known, and under which it has achieved not only a national reputation, but has also become known in different countries of Europe and South America. Its circulation is now in excess of Eight Thousand, and its awards of First Premium at State Fairs number thirty-seven.

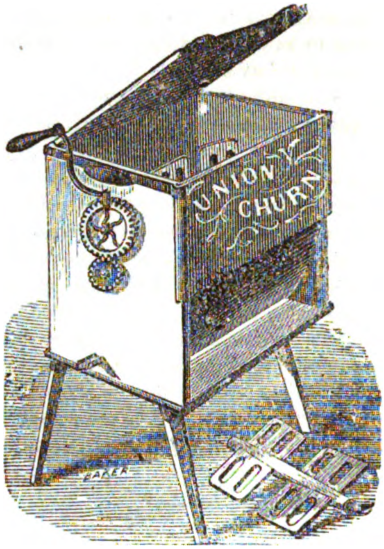
The patented features are technically known as the Feed Box—Fluted Rolls—Oil Tubes—Lapped Gearing—Diagonal Braces—Oil-Tight Boxes—Movable Sweep Cap—and Juice Channel.

Under the combination of these the Mill is so constructed that "the gearing is placed between the rolls, giving access to the boxes. The small wheels are lapped, bringing the minor rolls close together, thus dispensing with the guide plate, or 'dumb return.' The main roll has a wide flange. The sweep cap has a square eye, fitted to the squared end of the main shaft, removable by hand. The weight of the rolls is supported upon the ends of the shafts in adjustable oil-tight boxes. The feed roll is fluted. The top and bottom plates are diagonally braced; and the construction of the whole machine is such that it may be taken entirely apart by simply unscrewing the corner bolts—no keys being used in any part of the machine. As the result of its peculiar construction, the Mill combines in the greatest possible degree the elements of cheapness, strength, lightness of draught, ease of working and rapidity of execution."

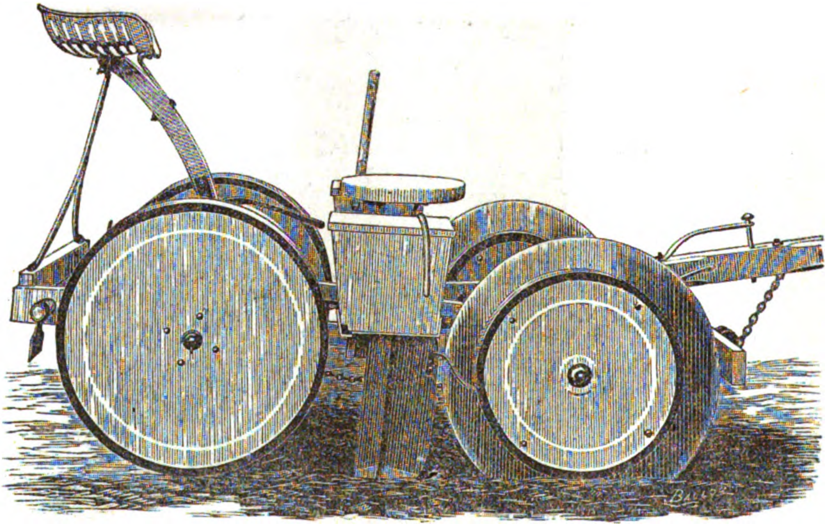


STILLWELL'S PATENT HEATER AND LIME CATCHER.

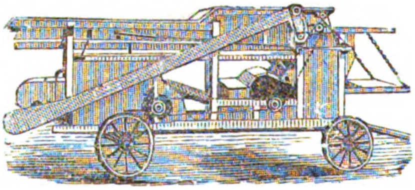
(See page 134.)



Saffell & Baldwin, Tiffin, O.



BURNS' CORN-PLANTER, ... Elyria O.



Younglove, Massey & Co., Cleveland.

No descriptions were received with these cuts.

J. H. KLIPPART, ESQ.—DEAR SIR:—In conformity with your request, "and to make it concise," I must forbear in the description of articles exhibited by me, in describing all; therefore, I would give you the description of but one of the articles on which I was awarded the first premium for the exhibition of novelties in the art of wood carving, from the Alps. This piece, not superior to the others, put on exhibition by me, was a lady's fan, exquisitely carved out of black walnut wood, so beautifully and artistically delicate that it was to all who saw it a subject of wonder and admiration. While exquisitely delicate, it was at the same time as strong and serviceable as any ivory fan could be. Its different spans were elaborated with boquets of flowers, with openings in shape of harps, etc.

In order to induce a proper appreciation of these works of art, I would state that twenty-five dollars could have been had for this one piece had it been for sale; a sufficient guarantee that such work would be amply rewarded in our prosperous State.

Yours, very respectfully,
H. G. NEUBERT.

BEE-HIVES.

OLENA, Nov. 23, 1868.

MR. KLIPPART—DEAR SIR:—In the premium list, you required us to give a description of the kind of hive we used. This was overlooked by me. The hive I use is one of my own invention; patented June 16, 1868. The box or body of this hive, which is constructed in two parts, is of the shape of the common box hive, with the difference only that it is made in two parts, and instead of a close tight top or cover, it is provided with a series of cross-bars arranged transversely from the back to the front; an equal number of bars being in each section and are parallel with the division. Those bars are at the top of the hive one-fourth of an inch apart, edge downwards, for the purpose of hanging the comb to. I then place a frame on the top of the bars with a glass in, to confine the bees to the hive; also to see in the hive. I then have a cap or hood made to fit down over the top and hive ten inches, thereby protecting the top and sides of the hive from storms; it also adds to the warmth of the hive in winter. I also do my own swarming, the comb being attached to the parallel bars and let downwards in distinct separate sheets; it is easily separated without injury to the combs and with little disturbance to the bees; and place empty halves to the filled ones, thereby making two swarms of one. I raise the hood, take off the glass, and put on my caps, for surplus honey; then place the hood on again until filled. I get more surplus honey and better, than I ever did from any other hive I ever used.

Yours truly,
S. P. SHIPLEY.

HONEY.

Ten pounds honey. Quinby's patent hive. Ordinary care.

LYMAN MILLER, Clyde, Sandusky Co., O.

CHEESE.

To the Awarding Committee on Cheese:

GENTLEMEN:—You are presented with fifty-one samples of cheese to which your attention is called and a careful examination is respectfully solicited. The cheese were made in the months of August and September, from the milk of two hundred cows, evening's and morning's milk, no addition of cream; except two old cheese, one of which was made the 10th of June, 1865, the other the 18th of September, 1867. The evening's milk is strained into the vat and cooled to sixty degrees; what cream has arisen during the night is dipped into the strainer and the morning's milk poured on to it. The steam is then applied and the milk brought to the temperature of eighty-two degrees in warm weather, and ninety degrees in extreme cold weather. Rennet is then added to coagulate the milk and make it sufficiently firm to cut in sixty minutes; then cut with a knife cross ways the vat and let it stand until green spots appear on the whey; then cut the other way of the vat and commence heating, string the curd carefully with the hands, cutting the curd at the same time until it is as fine as wheat. When the temperature reaches ninety-two degrees, shut off the heat, and let the curd settle twenty minutes; then draw off the whey nearly to the curd and commence heating slowly, stiring gently with the hands until the temperature reaches ninety-eight degrees, let it then stand until sufficiently cooked, and continue the curd in the whey until it becomes slightly acid; then draw off the whey and salt with Onondega F. F. salt, three pounds to one thousand pounds of milk. Press one day with two inch wrought iron screw, three foot lever; after taking from the press, grease and turn every day with preparation of rennet. Put fifteen rennets into a stone jar and fill the same with whey pressed from the cheese, let stand five or six days, then strain it off and it is fit for use.

In answer to the questions, we would say

1st. Improved natives.

2d. Timothy, red and white clover.

3d. Long continued grazing exhausts the soil.

4th. $100.

5th. The temperature of a room for curing cheese should be from seventy to eighty degrees, a much higher temperature would cause too rapid a state of fermentation causing a sharp, pungent flavor and bitterness; at a much lower temperature fermentation is too slow, causing the whey or moisture to remain too long in the cheese causing a sourish bitterness.

S. E. & H. N. Carter.

This certifies that this lot of cheese was made between the 12th and 25th of August, 1868, from 37 cows and from two milkings, without any addition of cream; the rennet rubbed in dairy salt, then stretched on a stick until dry, then put in a dry cloth and hung up for use. I use a screw press, and press from 20 to 24 hours; then I take the cheese out of hoop and place them on the shelf, and turn each every day. I press once only.

L. H. Fowler.

Munson, Geauga County, O.

September 21st.

BUTTER.

Made within the last ten days. Number of cows, three. Feed, only common pasture and poor at that. Milk kept in cellar in six quart pans. Churned in common wooden dash churn, with no chemicals. The milk as pure as when milked from the cows. Common table salt used to salt the butter; quantity of salt to suit the taste.

Thos. Secor.

Attest: H. S. Babbitt.

TEN POUNDS OF BUTTER.

This butter was made from two cows, in six days. Feed nothing but grass. The milk was set in tin pans, about a quart in a pan, and skimmed after standing about thirty hours. Just before churning, the cream was strained through a cloth; then churned in a common stone churn. The milk and cream were kept in a cool cellar. After churning, the butter was worked and salted—box salt being used—one ounce to a pound of butter. No saltpetre used. The butter was woiked three times, the last time made into rolls.

MRS. E. RAWSON.

MRS. SUSAN NYE'S BUTTER.

SEPTEMBER 22, 1868.

Made from two cows (one a two year old heifer), fed mostly on grass, with a few pumpkins. Milk set in a closet, in tin pans, near a room with a stove; the window open at the west with blinds closed constantly. Milk stands twenty-four hours before skimming; cream churned in a common stone dash churn; milk washed from the butter with cold water. One week since the first was churned; churned three times, the last churning the 21st inst. Let the butter stand 24 hours after salting before making into rolls. Salt, common table. No other substance.

This certifies that this butter was made about the middle of this month, from the milk of thirty-seven cows, without any other food than common pasture grass. The milk was strained into a common cheese vat over night; the cream was skimmed the following morning, and put in a common dash churn, when the butter was taken out in a common wooden bowl, and worked with a ladle until the buttermilk was separated, and then about an ounce of common dairy salt to a pound of butter, then worked evenly through and set away until next morning, then worked with a butter ladle until the buttermilk was out, and it was done.

MRS. M. FOWLER.

MUNSON, GEAUGA COUNTY, O.

To the Committee on Products of the Dairy:

The accompanying tub of butter was made in September instant, from five cows, fed exclusively on grass or clover and timothy pasture. Milk set in a cool place, and stood from twenty-four to thirty-six hours; churned in a Union hand churn, and worked with a hand ladle; two and a fourth ounces ground solar Salina salt to the pound. No saltpetre or sugar used.

MRS. A. J. KEENEY.

ERIE, September 21, 1868.

Three Loaves of "Domestic White Bread," Made Monday, Sept. 21, 1868.

This bread is what is commonly known as "salt-rising" bread. It is made of red wheat flour, and contains no alkali or acid.

MODE OF MAKING.

First, to make the "rising," I take a pint of boiling water, add half a teaspoonful of salt, let it cool until it will not scald the floor, then stir in flour until I have a stiff batter; keep in a warm place and stir frequently until it begins to rise; when it is light, to make the sponge, I scald about a pint of flour, add a quart of new milk, stir in flour enough to make a stiff batter, add the "rising," and keep in a warm place until it rises again; then mould into loaves, and when it is again light, bake three quarters of an hour. The "rising" can be made over night, and the bread baked early in the morning.

MAGGIE MCLOUTH.

PRICE LIST OF SWACKER & CO.'S PALACE PAINT COLORS.

These paints are packed in strong boxes of 100 pounds each, and warranted to be the best in the market. They are also warranted not to crack, scale or peel off from wood, brick or iron.

Name of Colors and Price List of Palace Colors, in 6, 12 and 25 pound cans.

Fawn	14	cents.
Drab	14	"
Milwaukee brick	14	"
Cleveland stone	14	"
Lilac	13½	"
Buff	14	"
Philadelphia brick	12	"
Yellow stone	13	"
Brown	11	"
Blue granite	14	"
Pink drab	14	"
Orange	16	"
Light brown stone	13½	"
Dark brown stone	13	"
Dark Chinese green	17	"
Light Chinese green	20	"

We will discount five per cent. on all bills up to 3,000 pounds, and over 3,000 pounds, seven per cent.

Delivered on board the cars at Bellefontaine, free of charge.

SWACKER & Co., Bellefontaine, O.

IMPROVEMENT IN PLOWS.

This invention relates to certain novel improvements on the construction of plows which are chiefly designed for hilling purposes. The nature of my invention consists in a hollow cast standard, which is constructed with side flanges on top to receive the beam; also with an eye in front for attaching the draught-rod to it; and also with a tapering point which is adapted for receiving and having secured upon it a shovel-blade and two laterally-projecting wings. It also consists in a clevis, which is constructed with a flanged segmental and slotted portion upon one end of a perforated extension, through which latter the draught-rod passes; said segmental portion being adapted to fit into a recess formed in the lower edge of the plow-beam, and to serve as a means of adjusting and setting the front end of the draught-rod at different angles with respect to the plow beam, according to the depth required to run the plow. It also consists in a slotted segmental stand, for receiving the round of the plow handles, and supporting these handles; said stand being so constructed as to admit of a ready adjustment of the handles, and to secure them rigidly at any desired angle with respect to the beam. The standard is suitably curved, and its lower end terminates in a wide shovel-like projection, having shoulder elevations cast upon its surface, against which the upper edges of the laterally-projecting wings abut. The front edge of the standard is also rounded horizontally, and the sides extend back, so as to afford great strength, and, at the same time, lightness. The point of the standard has a steel, diamond-shaped plate secured to it by means of a bolt, which plate forms the shovel point, and when worn out it can be removed and another substituted in its stead. The upper edges of this shovel plate form shoulder abutments, and serve, in conjunction with the shoulders and bolt fastenings, for rigidly securing the laterally-projecting wings to the standard point. When these wings are secured in their places, their upper edges, at the junction of their edges with those of the plate, are flush with the surfaces of this plate, and the front lower edges of these wings form rear inclined continuations of the side edges of the plate, so that in the operation of the implement the earth will be thrown upward and outward from the centre of the shovel point, thus leaving hills or ridges on both sides of the furrows.

This plow has many advantages over the plows that are usually made for this purpose, it being very simple and light, and at the same time very strong, and capable of doing twice the amount of work that the ordinary plows can do. Every farmer should have one.

Manufactured by Mitchell & Merrell, Maumee, Lucas county, O.

PEDIGREE AND DESCRIPTION OF R. J. CRITCHFIELD'S LAMBS.

The three yearling ewes are medium in size, very well covered with wool, the wool being very even in thickness on side, belly and back, extending on legs down to hoof, and being about two inches and one-half in length; and are very dark externally, with wool in fleece very white, which is peculiar to the Queen Family and all old "Longwool's get or posterity." The above ewes are lambs we raised or bred; their dams belong strictly to the Queen Family, and they were sired by old Longwool, he by old Greasy, by Wooster, by old Black, etc. By reference to the "Practical Shepherd," any one can find the Queen Family's description or pedigree. The lambs were bred from the same ewes, and from the well-known buck "Monitor," whose stock is very popular among the leading sheep men of Licking county. They are peculiary attractive on account of their strong constitution and very dense fleece.

Your obedient servants,

R. J. Crithfield & Co.

PEDIGREE OF W. B. PERKIN'S JACK.

Black Diamond will be three years old in June, 1869. Black color; stands fourteen and one-half hands high, weighs seven hundred and sixty pounds.

Pedigree.—He was imported to the United States from near the Bay of Biscay, by Mr. Franklin, a well-known citizen of Middle Tennessee. He was sired by old Barcelona, g. s., Aodorra, out of Lady Santander, g. d., Rose of Malta.

Very respectfully,

W. B. Perkins.

EXHIBITERS' STATEMENTS OF CROPS.

Auglaize County, Ohio, ss:

P. W. Giberson, being duly sworn, says he accurately measured the land upon which A. P. Rinehart raised a crop of wheat the past season, and the quantity of land is eight and one-half acres and no more.

Sworn to before me, this 10th day of November, 1868.

LEVI HARRODY, J. P.

Auglaize County, Ohio, ss:

A. P. Rinehart, being duly sworn, says that he raised a crop of wheat the past season upon the land measured by P. W. Giberson, and the quantity of grain raised thereon was three hundred and two bushels by weight, and no more, and that the statements in regard to the manner of cultivation, etc., are correct to the best of his knowledge.

Sworn to before me, this 10th day of November, 1868.

LEVI HARRODY, J. P.

MANNER OF CULTIVATION.

The ground was about half bottom and half upland; the season previous to sowing was tended in corn, then left to fallow; was plowed from June 1st to August 1st, as weather permitted; stable manure was then put on the poorest spots before harrowing; was then harrowed twice, and the upland rolled once; was then drilled, one bushel per acre, on the 27th and 28th days of August; kind of wheat sown, Ashburn.

COST.

To 5 days' plowing, at $1.50 per day	$7 50
" 10 loads manure, at 25c. per load	2 50
" harrowing and rolling, at $1.50 per day	3 75
" drilling, 1½ days, at $2.25 per day	2 81
" harvesting, hauling and threshing	71 65
" marketing	13 95
" 9 bushels seed sown, at $2.00 per bushel	18 00
Total	$120 16

VALUE OF CROP.

Number of bushels, 302, at $1.30 per bushel (the average received)	$573 80
Net income	453 64
Per acre	51 01
Yield per acre	35 bush. 31 lbs.

Rent of land, about $3.00 per acre, not considered.

The above is correct. A. P. RINEHART.

The sample sent has been run once through the fanning mill; that was all that was done to it.

A. P. RINEHART.

I forgot to say this kind of wheat is somewhat subject to red weevil; but when sown in good season, with a fair chance generally, escapes as well as most other wheats, and makes a *much* better yield than any other kind of wheat raised in this part of the country. It is stiff-strawed, and bears high cultivation better than any other kind.

A. P. R.

The within statement is satisfactory, and the committee recommend that the premium of $50, offered by the State Board for the best crop of wheat, be awarded to A. P. Rinehart, of Auglaize county. The committee are, however, of the opinion that the estimates of expenses of cultivation and rent of land upon which the above crop was raised is too low, and should be revised before being published.

D. McMillan,
W. B. McClung,
J. Park Alexander,
Awarding Committee.

STATEMENT OF D. C. RICHMOND, OF SANDUSKY, O.

I hereby certify that I produced from sixty rods of land seventy-five bushels Yellow Nansemond sweet potatoes. The land is poor and sandy, but in a warm location, sheltered by timber on the north, and has been under cultivation twenty-five years. Eight bushels of good wood ashes was put on the east side, and the land ridged up, making eight rows. Much the largest portion, and which produced the best potatoes, was manured in the hill with a compost of fish offal, from four to six quarts put in a hill. The land was all ridged with one horse, in sharp ridges three and one-half feet apart. Potatoes planted on the 20th of May, putting them 18 inches in the ridges apart, and the hills were three and one-half by two and one-half feet apart, and one plant put in the center of the hill.

Expenses of cultivation	$11 31
Cr. by 75 bushels potatoes, at $1.50	112 50

And I further certify that the whole crop, from three and three-fourth acres, was six hundred and seventy-two bushels, and a part of them planted very late, for seed only. The season was dry, and unfavorable for a large growth, but the quality was fair.

Erie County, ss:

Frederick Hartung, being duly sworn, says he accurately measured the land upon which D. C. Richmond raised a crop of sweet potatoes the past season, and the quantity of land is sixty rods and no more.

Fred. Hartung.

Sworn to before me and subscribed in my presence, this 31st day of December, A. D. 1868.

E. M. Colver,
Notary Public in and for Erie county, O.

Erie County, ss:

D. C. Richmond, being duly sworn, says that he raised a crop of sweet potatoes the past season, upon the land measured by Frederick Hartung, and that the quantity of sweet potatoes raised thereon was seventy-five bushels, measured in a bushel basket, and that the statements in regard to the manner of cultivation, etc., are correct to the best of his knowledge.

D. C. Richmond.

Sworn to before me and subscribed in my presence, this 31st day of December, A. D. 1868.

E. M. Colver,
Notary Public.

POTATOES.

The State of Ohio, Franklin County, ss.

Charles M. Jones, being duly sworn, says that he accurately measured the land on which G. S. Innis raised a crop of potatoes the past season, and that the quantity of land is 186 21-100 rods and no more.

C. M. Jones.

Sworn to before me this 5th day of June, A. D. 1869.

John M. Pugh, Probate Judge.

The State of Ohio, Franklin County, ss.

G. S. Innis, being duly sworn, says that he raised a crop of potatoes the past season upon the land measured by Charles M. Jones; that the potatoes were measured and reported to him from time to time, by Charles Killian; that he kept an accurate account of the same, and that said account footed up two hundred and twenty-three (223) bushels, or at the rate of 191 60-100 bushels per acre; and that the statements in regard to the manner of cultivation, &c., are correct to the best of his knowledge and belief.

G. S. Innis.

Sworn to before me this 5th day of June, A. D. 1869.

John M. Pugh, Probate Judge.

The State of Ohio, Franklin County, ss.

Charles Killian, being duly sworn, says that he accurately and carefully measured the crop of potatoes raised by G. S. Innis the past season, on the land measured by Charles M. Jones, and that the quantity was two hundred and twenty-three (223) bushels and no less.

Karl Killian.

Sworn to before me this 5th day of June, A. D. 1869.

John M. Pugh, Probate Judge.

Statement of G. S. Innis as to the cultivation, &c., of a crop of Potatoes raised on land measured by Charles M. Jones.

To 1 day plowing and harrowing	$3 50
To ½ day furrowing	1 00
To 3 days planting, at $1 25	3 75
To 2 days cultivating, " 1 25	2 50
To 2 days use of horse, " 75	1 50
To 2 days hoeing, " 1 25	2 50
To harvesting 223 bushels, at 14 cts. per bushel	31 12
Paid A. B. Buttles for nine bushels of seed	30 00
	75 87

Contra.

By 223 bushels of Harrison potatoes, at $1.50 per bushel	$334 50
Deduct expenses	75 87
Balance	258 63

Or at the rate of $222.22 per acre.

The above is correct. G. S. Innis.

There was no manure used for this crop, although the land had been manured a year or two previously.

The above is correct. G. S. Innis.

I don't like freshly-manured land for potatoes. G. S. I.

This statement not indorsed for publication in Annual Report, except so far as is governed by the present value of potatoes in market.

D. McMillan,
W. B. McClung,
J. Park Alexander.

The State of Ohio, Lucas County, ss.

Before me the undersigned, a Justice of the Peace in and for said county, personally appeared M. R. Johnston, who being duly sworn, deposes and says, that he did raise and sell, on the third (3d) day of July, a quantity of good-sized Early White Sprout potatoes; of which said potatoes a sample is now exhibited by him at the present State Fair, at Toledo. And further he says not.

M. R. Johnston.

Sworn to and subscribed before me at Toledo, O., this 22d day of September, A. D. 1868.

Otto Reidemeister, J. P.

State of Ohio, Franklin County, ss.

John Flanegan, being duly sworn, says that he measured the land upon which G. S. Innis raised a crop of potatoes the past season, and the quantity of land is eighty-four square poles and no more.

John Flanegan.

Sworn to before me this 27th day of December, A. D. 1867.

John M. Pugh, Probate Judge.

State of Ohio, Franklin County, ss.

G. S. Innis, being duly sworn, says that he raised a crop of potatoes the past season, upon the land measured by John Flanegan, and that the statements in regard to the manner of cultivation hereunto attached are correct, to the best of his knowledge.

G. S. Innis.

Sworn to before me this 27th day of December, A. D. 1867.

John M. Pugh, Probate Judge.

State of Ohio, Franklin County, ss.

Charles Killian and George Anderson, being duly sworn, say that they accurately measured the quantity of potatoes raised by G. S. Innis, on the land measured by John Flanegan, and that the number of bushels was ninety-nine and one-half, correctly measured in baskets, which held sixty pounds of potatoes each, as they repeatedly proved by actual test.

Attest:
John M. Pugh.

his
George ⋈ Anderson,
mark.
Karl Killian.

Sworn to before me this 27th day of December, A. D. 1867.

John M. Pugh, Probate Judge.

Statement as to cultivation, &c., of a crop of Potatoes raised by me on the land measured by John Flanegan. Potatoes measured by Charles Killian and George Anderson.

The land was comparatively new, having been tilled only six years; no stumps, however; fed on, while clearing, seven years ago this winter. No other manure:

To ½ day plowing, at $4 per day	$2 00
To 7 men and 1 horse ½ day, planting, at $1.50 per day	1 50
To cultivating 4 times, 1 day in all	2 00

To hand following cultivator	$1 00
To 5 bushels of seed, at $3	15 00
To cash paid for digging 99½ bushels of potatoes, at 6 cts. per bushel	6 00
Drawing in and putting in cellar	2 00
Whole cost of crop, as estimated	29 50

CONTRA.

By 99½ bushels of Early Goodrich potatoes, on hand for seed, at $3 per bushel.	$298 50
Net profit for 81-160 acre	269 00

Or at the rate of 512 38-100 dollars per acre.

The above is correct as near as I can estimate it.

G. S. INNIS.

CORN.

The State of Ohio, Franklin County, ss:

Charles M. Jones, being duly sworn, says he accurately measured the land upon which G. S. Innis raised a crop of Indian corn the past season, and the quantity is five acres and no more.

C. M. JONES.

Sworn to before me, this 15th day of January, A. D. 1869.

JOHN M. PUGH,
Probate Judge.

The State of Ohio, Franklin County, ss:

G. S. Innis, being duly sworn, says that he raised a crop of Indian corn the past season, upon the land measured by Charles M. Jones, and that the grain was accurately measured, and the measure verified by weighing at the starch factory of J. J. Wood & Co., and that the statements in regard to the manner of cultivation, etc., are correct to the best of his knowledge.

G. S. INNIS.

Sworn to before me, this 5th day of January, A. D. 1869.

JOHN M. PUGH,
Probate Judge.

The State of Ohio, Franklin County, ss:

Charles Killian, being duly sworn, says he measured the corn raised by G. S. Innis the past season, on the ground measured by Charles M. Jones, and that the quantity of grain was 462 bushels and no less.

KARL KILLIAN.

Sworn to before me, this 5th day of January, A. D. 1869.

JOHN M. PUGH,
Probate Judge.

Statement as to Cultivation, etc., of Five Acres of Corn raised by G. S. Innis the Past Season, on Land measured by Charles M. Jones.

The land is Scioto bottom of first rate quality; no manure except that left by the overflow of the river.

To 3½ days' plowing, at $3.50 per day	$12 25
" ½ " harrowing, at $3.50 per day	1 75
" 1 " furrowing	2 00
" 2 " planting, at $1.25	2 50
" 5 " plowing corn, at $2.00	10 00
" harvesting 462 bushels of corn, at 10 cts	46 20
" marketing " " at 3 "	13 86
	$88 56

CONTRA.

Cr.

By 462 bushels of corn, at 50 cts. per bushel	$231 00
Deduct expenses as above	88 56
Profit on the crop of five acres	$142 44

or $28.48 per acre.

Delaware County, ss:

S. B. Morehouse, being duly sworn, says he measured the land upon which Silas Sheets raised a crop of corn the past season, and the quantity of the land is three acres and no more.

S. B. Morehouse.

Sworn to before me, this 28th day of November, 1868.

Alexander Meeay, J. P.

Silas Sheets, being duly sworn, says that he raised a crop of corn the past season, upon the land measured by S. B. Morehouse, and the quantity of grain raised thereon was two hundred and forty-eight bushels and twenty-six pounds and no more, a part of the same being measured and then weighed, and the balance being measured at the same rate; and the statements in regard to the manner of cultivation are correct to the best of his knowledge.

Silas Sheets.

Sworn to before me, this 28th day of November, 1868.

Alexander Meeay, J. P.

MODE OF CULTURE.

Brown Tp., Delaware County, Dec. 1, 1868.

The soil is clay, timbered by oak and walnut. It was plowed eight inches deep; it was formerly a meadow; no manure used; loose and mellow was the condition; the kind of seed used was yellow, name not known. The time of planting was the 20th of May; the mode of planting was, dropping by hand and covering by horse; width apart, three and one-half feet.

THE TOTAL EXPENSE OF LABOR.

Plowing and harrowing	$12 00
Furrowing and planting	2 50
Tending and cutting	7 75
Husking and hauling	15 94
	$41 19
Present value of 248¼ bushels corn, at 50c. per bushel	124 25
Total expense of culture	41 19
Net profit	$83 06

Silas H. Sheets.

State of Ohio, Delaware County, ss:

William Patten, being duly sworn, says he measured the land upon which Cornelius Main raised a crop of corn the past season, and the quantity of land is three acres and no more.

William Patten.

Sworn to before me, this 30th day of November, A. D. 1868.

S. Lattimer, J. P.

Cornelius Main, being duly sworn, says that he raised a crop of corn the past season, upon the land measured by William Patten, and the quantity of grain raised thereon was two hundred and thirty-eight bushels and no more, weighed; and the statements in regard to the manner of cultivation, etc., are correct to the best of his knowledge.

CORNELIUS MAIN.
S. LATTIMER, J. P.

MODE OF CULTIVATION.

The soil upon which the above crop was raised was a black loam, rich; the kind of seed used was Yellow Hackberry, planted the 15th and sixteenth days of May, 1868; put in ground by hand and covered by jumper. The grain was weighed on the 27th and 28th days of November instant.

CORNELIUS MAIN.
S. LATTIMER, J. P.

Thomas B. Jones, being duly sworn, says that he raised a crop of potatoes the past season, upon the land measured by John Sexton; that the quantity of potatoes raised thereon was forty-eight and one-half bushels and no more, measured in a sealed half-bushel; and that the statement in regard to the manner of cultivation, &c., hereto annexed is correct, to the best of his knowledge.

T. B. JONES.

Sworn to by said Thomas Jones before me, and by him subscribed in my presence, this 1st day of December, 1868. J. HEPPLE, Justice of the Peace.

Statement for Premium on Field Crop.

1st. Expense of labor on ¼ of an acre, first plowing	$ 50
Three after plowings of crop	1 50
Expense of harvesting	2 50

No manure used.

2d. Condition and kind of soil, sandy loam, reddish color; had been planted to same kind of crop two preceding years. Soil loose and mellow.

3d. Kind and quality of seed used, Peach Plow, medium size.

4th. Planted in second week in May; furrowed 3¼ feet each way, and one potato or piece planted in each hill. Quantity planted about one bushel and one peck.

The entire crop was measured as aforesaid, and potatoes are free from rot.

T. B. JONES.

John A. Sexton, being duly sworn, says that he measured the land upon which Thos. B. Jones, above named, raised a crop of potatoes the past season; that the quantity of land is one-fourth of an acre and no more; that he helped and assisted in the measurement of said crop; and that there were forty-eight and one-half bushels of potatoes raised on said land.

Witness:
J. Hepple.

his
JOHN A. ⋈ SEXTON.
mark.

Sworn to by said John A. Sexton before me, and by him subscribed in my presence, this 1st day of December, 1868. J. HEPPLE, Justice of the Peace.

Edward P. Dickerman, being duly sworn, says that he measured the land upon which Benoni Dickerman raised a crop of potatoes the past season, and that the quantity of land is one-fourth (¼) of an acre and no more.

EDWARD P. DICKERMAN.

Sworn to before me this 13th day of November, 1868.

JOEL CLEVELAND, J. P.

Benoni Dickerman, being duly sworn, says that he raised a crop of potatoes the past season upon the land measured by Edmard P. Dickerman; that the quantity of potatoes raised thereon was 67 bushels and no more, measured in a sealed half-bushel; and that the statements in regard to the manner of cultivation are correct, to the best of his knowledge.

BENONI DICKERMAN.

Sworn to before me this 13th day of November, 1868.

JOEL CLEVELAND, J. P.

Edward P. Dickerman, being duly sworn, says that he measured the land on which Benoni Dickerman raised a crop of potatoes the past season, and that the quantity of land is ¼ of an acre and no more.

EDWARD P. DICKERMAN.

Sworn to before me this 13th day of November, 1868.

JOEL CLEVELAND, J. P.

Benoni Dickerman, being duly sworn, says that he raised a crop of potatoes the past season upon the land measured by Edward P. Dickerman; that the quantity of potatoes raised thereon was 65 bushels and no more, measured in a sealed half-bushel; and that the statements in regard to the manner of cultivation are correct, to the best of his knowledge.

BENONI DICKERMAN.

Sworn to before me this 13th day of November, 1868.

JOEL CLEVELAND, J. P.

Statement of B. Dickerman.

The ground on which I raised 132 bushels of potatoes the past season is second bottom, or sandy loam.

The Condition.—It had been in grass, meadow or pasture about 10 years, with no manure artificially applied, except a few ashes occasionally.

Management—It was plowed early in March, to the depth of 8 inches; was well harrowed on the 1st of April, and furrowed 5 or 6 inches deep; furrows 3 feet apart. About ¼ acre planted the 4th day of April, the remainder the 24th.

Method of Planting.—The seed cut to one or two eyes, one piece in a place; distance about 18 inches, each piece with the cut side down, covered 4 or 5 inches deep.

Manner of Cultivating.—The strength of the sward prevented the early use of the cultivator, and necessitated the use of the hoe; later, the double-shovel was run once in each furrow, followed with the hoe, leaving a continuous ridge. No weeds or grass tolerated.

Varieties.—Early Goodrich, ripening last of July, 40 bushels of seed from one; Early Harrison, ripening middle of August, 45 bushels from one; Calico, time middle of Sep tember, good quality and yield: Garnet Chili and Pinkeye Rustycoat, No. 1 for quality and yield.

Cost of Cultivation.—Preparing the ground, $3; seed and planting, $7; digging, $5.

Respectfully submitted, BENONI DICKERMAN.

John Robinson, Esq., of Wayne Tp., Columbiana county, was awarded a premium for the best one-fourth acre of Chinese Sugar Cane. The soil, a part of which was slate and gravel, the balance clay—a part in sorgum, last year, and a part in sod—was plowed, harrowed, and cultivated in the usual way. The manure used was from the stable, mixed with coal ashes, which were spread upon the surface and turned under.

Cost for plowing, harrowing, planting and cultivating	$3 00
Taking off and hauling to manufacturers	4 00
Paid for manufacturing 77 gallons, at 35c per gall.	26 95
Total expense	33 95
77 Gallons molasses, at $1.20 per gall.	92 40
Net profit	58 45

To the officers and members of the Champaign County Board of Agriculture:

This is to certify that the crop raised on the ground previous to the crop of corn I now offer for premium was wheat, and the crop next preceding the wheat was corn, and a very large crop; but the wheat was poor, being winter killed. The field contains eighteen acres, most of which was given a heavy coat of well-rotted straw manure before planting in corn in 1866. The land is known as barren. The soil is a mixture of sand and clay, with a stiff clay sub-soil. At the depth of from eighteen inches to three feet is found a bed of gravel—pure lime stone. This gravel and the sub-soil is separated by a hard substance of yellow clay and fine lime-stone gravel, and, dug up, has very much the appearance of being mixed with lime.

This crop had no extra labor. The ground was plowed about the first of May, with a common three-horse plow, and then harrowed, marked out three and a half feet with a common marker, and on the 20th of May furrowed with a one-horse mould board plow, and covered with a forked shovel plow. When up, the corn was harrowed, and during the season was plowed three times with a double-shovel plow, and thinned to three and four stalks in a hill, cut up in shocks twelve hills square on the 20th of September, and a sample of the grain is herewith presented.

Expense of cultivation	$5 00
Husking and cribbing	3 00
Total	8 00

(Signed) Samuel Humes.

AFFIDAVITS OF THE PARTIES WHO MEASURED THE CORN.

State of Ohio, Champaign county, ss.:

Personally appeared before me, W. A. Humes, a Notary Public within and for the county aforesaid, Samuel R. Humes and Robert N. Rannells, of the same place, who, each being duly sworn, say that they assisted in measuring an acre of ground and the corn raised thereon by Samuel Humes, of Union township, Champaign county, Ohio; and that the amount of corn thereon was 93 8-9 bushels, calculating three half bushels of ears for one bushel of shelled corn.

We also measured another acre, and found the corn thereon to be 92 4-9 bushels.

In witness whereof we have hereunto set our hands, this 4th day of December, A. D. 1868.

S. R. Humes,
R. N. Rannells.

Sworn to and subscribed before me this 4th day of December, A. D. 1868.

W. A. Humes,
Notary Public.

Statement furnished by John Earsom, of Union township, for an application for premium on crop of hay.

August 20, 1868.

This is to certify that I assisted James Duncan, Jr., James Duncan, Sr., and R. R Earsom, in measuring two acres of ground and weighing the hay that grew thereon, and on the first acre there were eighty hundred and twenty-four (8024) pounds, and on the second acre there were seventy-eight hundred and ninety-seven (7897) pounds of hay. The soil is Buck Creek bottom (Prairie); has been in grass some thirty years. It is covered by the wash from two runs that come from the adjacent hills, which leaves a sediment of some one and a fourth inches in thickness.

(Signed) JOHN EARSOM.

Sworn to before me September 15, 1868.

O. T. MOODY, J. P.

AFFIDAVITS OF PARTIES MEASURING ABOVE NAMED GROUND AND WEIGHING HAY.

State of Ohio, Champaign county, ss.:

Before me came James Duncan, Jr., and R. R. Earsom, who, on oath, say:

On the 23d of July, 1868, we were called upon by John Earsom, of Union township, to assist in measuring the ground and weighing the hay cut thereon. We found the hay in good order, and it weighed 8,024 pounds.

JAMES DUNCAN, JR.,
R. R. EARSOM.

Sworn to before me September 15, 1868.

O. T. MOODY, J. P.

State of Ohio, Champaign county, ss.:

Before me came James Duncan, Sr., and R. R. Easom, who, being duly sworn, depose and say: That on the 23d day of August, 1868, we were called to assist in measuring the ground and weighing the hay that grew thereon. We found it in good order and dry, and on the acre we weighed there were 7,897 ponuds.

JAMES DUNCAN, SR.,
R. R. EARSOM.

Sworn to before me September 15, 1868.

O. T. MOODY, J. P.

***Brown county**, ss.:*

Silas Bayne, being duly sworn, says he raised seven-tenths of an acre of white tobacco on a soil which may be called black walnut and blue ash, without being manured, and that the quantity produced was one thousand and seventy pounds, and that the statement in regard to the mode of tillage and expense of raising the crop is correct, to the best of his knowledge.

The amount of labor on the said crop of tobacco was as follows:

Plowing and harrowing ground	$2 50
Furrowing and hilling same	2 50
Pulling and setting plants	2 00
Plowing and hoeing same	6 00
Topping, worming and suckering	6 00
Cutting and housing same	6 00
Stripping and bulking	6 00
Total cost of crop	31 00

I hereby certify the foregoing statement to be correct, this 2d day of January. 1869.

SILAS BAYNE.

Subscribed and sworn to before me this 2d day of January, A. D. 1869.

JAMES P. KIMBALL,
Notary Public.

The State of Ohio, Medina County, ss :

Personally appeared G. H. King, who being duly sworn, states that he raised one acre of corn in the following manner:

Soil, sandy loam; this is the third crop of corn in succession, with a coating of manure at the rate of twelve loads per acre. Planted the 30th day of May, A. D. 1868, four feet by three feet, with five to eight kernels in the hill, and of the variety Sweet corn.

COST OF CUTIVATION.

Hauling manure	$1 00
Plowing, dragging and marking	2 00
Planting	1 00
Cultivating and hoeing once	2 00
Cutting and shocking	3 00
Husking	8 00
Total expense	$17 00

RECEIPTS.

One hundred and forty-four bushels corn, at 40c	57 60
Corn fodder	10 00
	$67 60
Deduct total expense	17 00
Net profit	$50 60

I cut the corn in eight equal rows of shocks, and husked only one row of shocks, it being an average of the whole. The reason why I did not husk the whole of it was, I picked two rows of shocks, rathen green, to feed.

[Signed] G. H. KING.

Sworn to and subscribed before me, this 9th day of December, A. D. 1868.

ALDEN WHITMAN, J. P.

William King, being duly sworn, says he accurately measured the land upon which G. H. King raised the within crop of corn the past season, and the land is one acre and no more.

[Signed] WM. KING.

Sworn to before me, this 9th day of December, A. D. 1868.

ALDEN WHITMAN, J. P.

I, H. N. Robb, of Lafayette township, Medina county, Ohio, do hereby certify that in the year 1868 I raised from one acre of land one hundred and forty-one bushels of sound corn and twelve bushels of unsound or damaged corn, by measure in the ear; that Joseph Robb assisted in the measurement of the land and corn; that said land was second bottom land so called; said land was ploughed and planted in 1867 to corn and potatoes; prior to that time said land had been in meadow or pasture for about four or five years. The corn was planted after spring ploughing.

H. N. ROBB.

The State of Ohio, Medina county, ss:

I, Joseph Robb, being first duly sworn, make oath and say, that I am acquainted with H. N. Robb above named; that I assisted in the measurement of the land and corn above mentioned, and I verily believe the above statement to be true and correct.

JOSEPH ROBB.

Sworn to and subscribed before me, this 17th day of December, A. D. 1868.

N. H. BOSTWICK,
Notary Public.

I, Jacob Derr, of Montville, Medina county, Ohio, do hereby certify that I raised from one acre of land, this year, one hundred and forty bushels of corn in the ear by measure. It was on bottom land, in what has been and is often termed the Bear Swamp; soil, a black muck; it was on green sward ploughed this spring; it had been in grass about six years.

JACOB DERR.

NOVEMBER 19, 1868.

The State of Ohio, Medina County, ss:

I, J. Mills, being first duly sworn, make oath and say, that I am well acquainted with the land and corn above mentioned; that I helped husk and measure the corn of said J. Derr; I helped measure the whole acre, and further say his statement is true and correct, as I verily believe.

J. MILLS.

Sworn to and subscribed before me, this 19th day of December, 1868.

N. B. BOSTWICK,
Notary Public.

Statement of M. H. Keith, of Carlisle, Lorain County.

These crops of corn and potatoes were raised on marshy ground; the potatoes were hoed twice, and the corn but once; the ground was measured by Joseph Swift, Jr., County Surveyor, assisted by M. B. Keith, who also weighed and measured the crop, both of corn and potatoes. From the acre of corn was harvested one hundred and thirty-two bushels of corn, weighing forty-eight pounds per bushel—6,336 pounds on the acre. From the half acre of potatoes was harvested one hundred and forty bushels of potatoes, weighing sixty-six pounds per bushel—9,240 pounds to the half acre.

M. H. KEITH.

CARLISLE, December 31st, 1868.

Sworn to before me, and subscribed in my presence, this 31st day of December, 1868.

L. B. SMITH,
Justice of the Peace.

I hereby certify that I assisted Joseph Swift, Jr., to measure the ground upon which the above crops of corn and potatoes were raised, and that I helped measure and weigh both the corn and potatoes; and I know the above statements of amount of ground and quantity and weight of crop, both of corn and potatoes, to be correct.

M. B. KEITH.

Sworn to before me, and subscribed in my presence, this 31st day of December, 1868.

L. B. SMITH,
Justice of the Peace.

At a meeting of the Board of Directors of the Morgan County Agricultural Society held on the 12th inst., to award premiums on Field crops, and the transaction of other business, the first premium of $4 was awarded to Samuel H. Scott, of Windsor township, on field crop of Irish potatoes, raised in 1868, whose statement of the manner of cultivation, etc., is presented to the farmers and producers of this county:

Statement of Samuel H. Scott, of Windsor Township, Morgan County, on Field Crop of Irish Potatoes raised in 1868.

The land upon which this crop of potatoes was raised is table land, sandy and a little rolling, and had lain in timothy meadow the two years preceding. It was plowed the first week in April, 1868, having, before breaking up, six two-horse wagons of manure spread on it, plowed about six inches deep, furrowed out with a one-horse plow in furrows 3 feet apart. The seed potatoes were cut up with about three eyes in each piece, and planted in single pieces 10 inches apart in the furrows. I planted Peach Blows, except 3 rods that I planted with Rowan potatoes, and covered with a hoe about two inches deep. As soon as the plants were up with 2 or 3 leaves, I plowed with a shovel plow and weeded well. I plowed five times about a week apart. Commenced digging about the 25th day of September, and gathered 165½ bushels of the Peach Blows and 4½ bushels of the Rowans—total, 170 bushels. The Peach Blows yielded in proportion about 1-7 more than the Rowans.

EXPENSES OF CULTIVATION.

Use of land	$4 00
6 wagon loads manure	6 00
Plowing and furrowing out	1 50
Seed potatoes, 8 bushels, at 90c	7 20
Planting	3 50
Plowing and hoeing	5 00
Digging and storing	12 75
Total expenses	$39 95
Harvested 170 bushels potatoes, worth 75c. per bushel	127 50
Expenses as above	39 95
Net profit	$87 55

The foregoing statement was accompanied by the necessary affidavit of Mr. Scott, and of U. D. Mann, of the same township, who measured the land upon which said crop was raised, and who declares the same to measure 81 25-33 rods.

JOHN S. ADAIR,
Sec'y Morgan Co. Ag. Society.

DECEMBER 31, 1868.

Statement of Mrs. A. H. Redington, of Amherst, of Best Twenty Pounds Butter in Tub, Firkin or Crock.

Butter was made in July, from the milk of five cows, which were fed upon grass only. No "condiment" was used, except "Ashtor's" salt—about one pound of salt to twelve pounds of butter.

MRS. A. H. REDINGTON.

Mrs. Redington's butter received the first premium of three dollars.

J. T. METCALF,
Sec'y Lorain Co. Ag. Society.

Statement of Edward Ames, of Ridgeville.

The cow entered by me to compete for premiums as giving the greatest weight of milk, and also as making the largest amount of butter, is of native stock; is two years old; was fed upon grass, with the addition of two quarts of ground feed per day; the grass was very poor. The amount of milk by weight for ten days, commencing June 1st, 1868, was 383 pounds; the amount of butter made in ten successive days, commencing with the 5th day of June, 1868, was 19 pounds.

E. Ames.

I assisted in weighing the above milk, and in making the butter, and certify that the above statement is correct and true.

B. Ames.

Personally appeared the above named persons, who made oath that the above statement is true.

Samuel Beebe,
Justice of the Peace.

Statement of Richard Baker, of Russia.

COWS FOR BUTTER.

"Victoria," ¾ Shorthorn, calved April 16, 1868; in ten days, commencing June 2, 1868, gave 19 pounds four ounces of butter.

"Ruby," ⅞ Shorthorn, calved July 7, 1868; gave in ten days, commencing July 20, 1868, 16 pounds 2 ounces of butter.

COWS FOR WEIGHT OF MILK.

"Nymph," Shorthorn, calved April 28, 1868; gave in ten days, commencing June 10, 1868, 551⅛ pounds weight of milk.

"Lavinia," Shorthorn, calved April 8, 1868; gave in ten days, commencing June 10, 1868, 512½ pounds weight of milk.

The above statements are correct.

This is to certify that I milked the above cows; I helped to weigh both the milk and the butter, and I believe the above statements to be correct.

A. Baker.

Personally came before me, a Justice of the Peace for Lorain county, Ohio, R. Baker and Alfred Baker, and made oath that the above statements are correct.

Lyman Cole,
Justice of the Peace.

The first premium for best milch cow, Shorthorn, was awarded to Richard Baker's "Victoria," $10. The second premium for best milch cow, Shorthorn, was awarded to R. Baker's "Ruby," $5. The first premium for greatest weight of milk was awarded to R. Baker's "Nymph," $15. The second premium for greatest weight of milk was awarded to R. Baker's "Lavinia," $10.

J. T. Metcalf,
Sec'y Lorain Co. Ag. Society.

BEST FACTORY-MADE CHEESE.

Statement of Willow Factory Cheese.

Cheese made June 14, 1868; five cheese made the same day, from the milk of one hundred and ten cows. The evening milk was immediately cooled down to 65 deg. F.

by the use of ice and water. In the morning the cream was well mixed with the morning's milk as received, and the whole set with rennet at 80 deg., no other cream being added, and only two messes of milk. The rennets are prepared from calves not less than four days old. The curds are taken from the skins, well salted, and then returned to the skins, and hung in a cool, airy place, free from smoke and dust, for at least ten days. About fourteen rennets at a time are put into a sweet oak cask, and water, salt, lemons, sage, allspice and cloves added. Enough of the strained liquor is put in the milk to coagulate it fit for cutting in forty minutes. A very little coloring matter is used, prepared from the best refined East India annatto. One pound of the gum is put into a jar and four gallons of strong lye added, and enough of the liquor is used to give the curd a little color. We use five ounces of salt to fifteen pounds of curd. The cheese are kept in the press 24 hours; amount of pressure, twenty-five pounds to the square inch. As soon as the cheese are removed from the press they are removed to the dry house, oiled with butter made from whey, are then rubbed and turned daily, and occasionally oiled. The dry house is kept at a temperature of 70 deg., as near as may be.

PERRY P. FULLER,
Manufacturer.

LONGWOOL SHEEP—NOT LEICESTERS.

The rams over two years old were all fair animals. Joy & Hill's, though small, had a nice fleece of lustrous wool. Jones exhibited a large, heavy-wooled sheep. Aston's were both fine animals, of thoroughbred Cotswolds. The Canada sheep was very straight on the back, but too leggy, and thin on the thigh. Evidently, the wool had been left to make a better show for "leg of mutton." Aston's ram had a heavy, long, lustrous fleece, with a full breast, excellent shoulder and fore flanks, very full in the thigh, with a broad, straight back; in fact, a model sheep. McRea's yearling was not in the ring. Jones' (in the opinion of your committee) was Leicester. Aston's both fine sheep. In ewes over two years, Driggs' were evidently neglected Leicesters, and not worthy of a second premium. Yearling ewes, Jones' were Leicesters; Driggs' not worthy, even if not Leicesters; Aston's two years hard to beat, had there been competition. Nos. 13 and 3 of ewe lambs were fine specimens of Longwool lambs. In ewe lambs your committee could not award a second premium. Your committee are unanimous that the Canada sheep, with the exception of ram, in this class are Leicesters, and as pure as those exhibited by Jones in that class. In view of this, and that these sheep (also the Southdown ewes from Canada) were there, fatted for the butcher, we do unanimously recommend the Ohio State Board not to admit Canada sheep to their exhibitions.

R. BAKER, Amherst,
CALVIN DODGE, New Lyme,
WM. H. LAUNDER, Elyria,
Awarding Committee.

List of Pears Exhibited by Geo. Powers & Son at the State Fair held at Toledo, September, 1868, *upon which they were Awarded a Premium, viz.:*

3 varieties of Summer and Fall—1, Bartlet; 2, Flemish Beauty; 3, Seckel.

10 varieties of Fall and Winter—1, Bartlet; 2, Flemish Beauty; 3, White Doyenne; 4, Seckel; 5, Onondagua; 6, Louise Bonne de Jersey; 7, Duchesse d'Angouleme; 8, Buerre Diel; 9, Winter Nellis; 10, Buerre Easter.

5 plates of best Market—1, Bartlet; 2, Flemish Beauty; 3, Louise Bonne de Jersey; 4, Onondagua; 5, Duchesse d'Angouleme.

Plate of one variety—Buerre Diel.

20 varieties and upward, viz.: Bartlet, Flemish Beauty, Kirtland, St. Ghistain, White Doyenne, Grey Doyenne, Doyenne Siecle, Passa Colmer, Leon Le Clerc, Napoleon, Howell, Glout Morceau, Buerre Speme, Seckel, Dix, Louise Bonne de Jersey, Duchesse d'Angouleme, Andrews, Lawrence, Buerre Langlelier, Oswego Buerre, Columbia, Long Green, Winter Nellis, Buerre Moier, Buerre Hardy, Shelden, Prince St. Germain, Belle Lucrative, Paradise de Autumn, Duchess d'Orleans.

The following awards were made by the Ohio State Board of Agriculture, at its January session, on articles commended at the State Fair, at Toledo, in September last:

Daniel Barnes, Wauseon, twin calves	$5
Hay & Seeley, Edgerton, stave planer and jointer	Diploma.
C. Richardson, Auburn, N. Y., reaping machine knife grinder	“
Kittering & Strong, Defiance, lathe for turning hubs	“
Gates, Skidmore & Co., Toledo, display of hand rakes	“
Whitaker, Phillips & Co., Toledo, hay and straw forks	“
Long, Black & Allstatter, Hamilton, case of sickles	“
Campbell & Hardick, Brooklyn, N. Y., steam pump	“
J. C. McKenzie, Adrian, Mich., improvement in brick mould	“
Heckman & Gerber, Toledo, polybladed knife	“
American Steel Works, Pittsburgh, Pa., tool and machinery steel	“
Russell & Thayer, Toledo, iron column for building	“
A. Gleason, Hillsdale, Mich., type for die sinking	“
Ballard & Rood, Toledo, galvanized cornice and brackets	“
R. W. Rigby & Co., Toledo, bed-room furniture, (display)	“
E. Erb, “ “ “ “	“
Trobridge Bros., “ coopering materials and work	“
B. W. Conroy, Port Huron, Mich., spoke and felloe	“
Palace Paint Co., Bellefontaine, display of paints	“
West & Truax, Toledo, ornamental window glass	“
J. T. Merriman, Burton, display of grain	$10
H. L. Phelps, Toledo, display of cake	Diploma.
Bronson & Messenger, Toledo, fine cut tobacco	“
D. C. Richmond, Sandusky, 2d premium on display of vegetables	$10
Moore & Cole, Toledo, display of horse drapery	Diploma.
J. C. Price, “ “ gents' shirts and goods	“
F. H. Hough & Co., Toledo, display of house furnishing goods	“
Brigham & Warren, Three Rivers, Mich., top buggy	“
Mrs. M. Dixon, Toledo, napper bed-spread	$3
J. A. Granger & Co., Toledo, display of cotton batting	Diploma.
C. Schausenback & Co., Toledo, display of dry goods	“
Hulbert Bros., Cincinnati, display of hosiery and fancy knit articles	“
Mrs. M. C. Thatcher, East Toledo, agricultural wreath	$3
Miss Mary E. Horton, Piqua, crochet toilet mats	1
“ “ infant crochet square	1
“ “ “ bib	1
Daily and Weekly Times, Cincinnati, sample of job printing	Diploma.
Eaton & Backus, Toledo, display of dry goods	“
T. J. Brown, Toledo, display of books	“

Miss Emma Ohmer, Dayton, embroidered slippers	$3
North & Oswald, Toledo, display of photographs	Diploma.
C. H. Stark, Toledo, specimens of graining	"
E. W. E. Koch, Toledo, ornamental rock work	"
F. Thorp, Bucyrus, India ink painting	"
D. Douglas Bly, Chicago, artificial legs and arms	"
Marshal Ross, Perrysburg, collection native bird's eggs	$5
W. W. Whitney, Toledo, melodeon with two setts reeds	Diploma.

FIELD CROPS.

D. C. Richmond, Sandusky, crop of sweet potatoes	$15
G. S. Innis, Columbus, crop of potatoes	25
A. P. Rhinehart, Auglaize Co., crop of wheat	50

JOHN H. KLIPPART,
Corresponding Secretary.

ABSTRACT OF REPORTS OF COUNTY SOCIETIES.

County.	President.	Treasurer.	Secretary.	Place of Fair.	Time of Fair.	Receipts	Expenditures.	No. of Memb'rs.	No. of Entr's.
Allen			G. W. Overmyer	Lima		$568 62	$501 75	253	407
Ashland	Jas. Alberson	J. B. F. Sampsel	R. M. Campbell						
Ashtabula	D. L. Bailey	E. C. Wade	E. J. Betts		Sept. 15, 16, 17	2,054 45	1,905 18		
Athens	C. S. Wilson	H. N. Van Vorhes	A. W. Glazier	Athens	Oct. 15, 16	1,425 22	1,199 95	527	
Auglaize		O. T. Dieker	E. P. Davis			604 49	573 16		
Belmont	Isaac Welch	Ross J. Alexander	R. H. Cochran	St. Clairsville	Sept. 23, 24, 25	786 21	761 00	316	
Brown	A. M. Ellsberry	C. F. King	W. T. Galbreath	Georgetown	Sept. 15, 16, 17, 18	2,212 54	1,835 52	492	
Butler	F. Anderson	Jas. Giffen	W. R. Cochran	Hamilton	Oct. 6, 7, 8, 9	5.625 42	4,009 77		2,165
Carroll	E. W. Guise	Wm. Thompson	M. McLaughlin	Carrollton	Oct. 14, 15, 16	2,366 47	2,309 11		
Champaign	Danl. Blose	D. W. Todd	W. A. Humes	Urbana	Sept. 29, 30, Oct. 1, 2	3,425 71	2,882 45		1,200
Clarke	Amos Whiteley	Luther Brown	Asa Bushnell	Springfield	Sept. 8, 9, 10, 11	5,442 13	5,192 26	650	
Clermont				Boston					800
Clinton	J. S. Hoblit	C. N. Osborn	Levi Mills	Wilmington		797 45		500	561
Columbiana	Wm. Mathers	Jas. Scott	Jno. A. Myers	New Lisbon	Sept. 23, 24, 25, 26	1,727 63	1,656 47	400	1,442
Coshocton	Wm. Hanlon	Mathew Johnson	Luther S. Cantwell	Coshocton	Oct. 7, 8, 9				
Crawford	Josiah Koller	J. B. Gormley	Geo. Keller	Bucyrus	Oct. 6, 7, 8, 9	3,061 30	2,953 16	315	
Cuyahoga	J. M. Hickox	Ben. J. Slair	S D. Harris		Sept. 8, 9, 10, 11	1,861 52	2,508 69		
Darke	G. W. Studabaker	Jno. E. Matchett	Noah Arnold	Greenville	Sept. 30, Oct. 1, 2, 3	2,865 94	1,570 58		
Delaware	Kenton Durfey		J. D. Van Deman	Delaware	Oct. 6, 7, 8, 9	2,948 23	2,893 87		
Erie	D. C. Richmond	A. W. Prout	J D. Chamberlin	Sandusky	Sept. 30, Oct. 1, 2, 3	2,830 61	2,634 43		
Fairfield	Jno. S. Brasee	Jno. C. Weaver	J. G. Reeves	Lancaster	Oct. 7, 8, 9	4 128 35	3,711 58	1,047	726
Franklin	B. F. Rees	Jno. M. Pugh	C. S. Glenn	Columbus	Oct. 6, 7, 8, 9	10.664 48	10,672 09		
Fulton	D. W. H Howard	A. B. Canfield	Jas. L. Chatfield	Ottokee	Sept. 9, 10, 11			272	
Geauga	Peter Hitchcock	Geo. Boughton		Burton		1,610 00			
Guernsey	Hugh Wilson	Alex. McCracken	C. P. B. Sarchet	Cambridge	Oct. 21, 22				
Hamilton	T. Wilson	J. C. Hunt	Jno. W. Kennedy	Carthage	Sept. 1, 2, 3, 4, 5	3,996 41	3,996 41	150	
Hancock	A. W. Frederick	G. W. Galloway	D. B. Beardsley	Findlay	Oct. 1, 2, 3			514	
Harrison	M. S. Jamison	Jno. N. Hanna	Jacob Jarvis	Cadiz	Sept. 30, Oct. 1, 2				
Henry	J. A. Stout		A. H. Tyler		Sept. 16, 17, 18				
Hocking		J. C. Rochester	J. M. Floyd	Logan	Oct. 1, 2, 3	842 17	623 85	140	
Huron			C. S. Kennan	Norwalk	Sept. 16, 17, 18			280	
Jackson	Geo W. Brown	Wm. B. Steele	J. A. Sell	Jackson	Oct. 1, 2	616 76	468 09		
Knox	G. B. Potwin	J. D. Thompson	A. Cassil	Mt. Vernon	Sept. 29, 30, Oct. 1	3,419 53	2,325 85		
Lake	Harmon Carroll	H. Steele	D. W. Mead	Painesville	Sept 30, Oct. 1, 2	1,093 55	1,061 68		
Licking	Wm. Veach	T. J. Davis	J. W. Bigelow	Newark	Oct. 6, 7, 8, 9			778	

ABSTRACTS OF REPORTS OF COUNTY SOCIETIES—Continued.

County.	President.	Treasurer.	Secretary.	Place of Fair.	Time of Fair. *	Receipts	Expenditures.	No. of Memb'rs	No. of Entr's.
Logan	Dr. G. W. Harris.	Jno. M. Riddle	Jas. Walker	Bellefontaine	Oct. 6, 7, 8, 9	1,957 31	870 52		532
Lorain	Wm. A. Braman	Isaac S. Metcalf	I. S. Metcalf	Elyria	Sept. 15, 16, 17, 18.	3,817 75	3,992 03	552	
Mahoning		J. W. Canfield	F. C. Nesbitt	Canfield		2,061 44	1,538 55		
Marion			J. E. Davis	Marion	Oct. 14, 15, 16, 17	6,500 70	6,391 66	222	662
Medina	Wm. Bennett	S. B. Woodward	N. H. Bostwick	Medina		1,596 76	1,330 88	500	
Meigs	Abner Stout	H. B. Smith	Danl. A. Russell	Rock Spring	Oct. 15, 16	5,003 56	4,885 44	500	
Mercer	J. Broadwell	A. Davis	S. T. Deford		Oct. 14, 15, 16	1,113 30	1,101 84	660	265
Miami	W. H. Dye	C. H. Culbertson.	W. H. Gahagan	Troy	Sept. 30, Oct. 1, 2, 3	1,654 28	1,805 94	600	800
Montgom'ry	Marcus Eells		Frank B. Morrison	Dayton	Oct. 7, 8, 9	688 00	1,095 00	451	455
Morgan		F. M. Kahler	J. S. Adair	McConnelsville.	Sept. 29, 30, Oct. 1	1,264 52	1,264 52	431	
Morrow	M. B. Brooks		T. H. Wood	Mt. Gilead		1,685 00	1,139 24	297	
Muskingum.	V. Best	Jas. Buckingham.	F. A. Seborn	Zanesville	Sept. —	2,219 83	2,250 99	300	
Noble	Wm. J. Laughlin.	Wm. M. Stewart.	Jonas Danford	Sarahsville		593 25		177	
Ottawa	E. Lattimere		G. A. Kraemer	Oak Harbor	Oct. 7, 8, 9	230 45	230 45		
Portage	N. S. Olen	J. T. Catlin	W. Williamson	Ravenna	Sept. 15, 16, 17	689 96	597 99		
Preble	H. W. Dooley	Jos. Fisher	Jas. Albert	Eaton	Sept. 22, 23, 24, 25.	1,608 63	1,442 01		
Putnam	Jno. Maidlow	T. S. Oleny	W. W. Place			1,292 78	1,702 06	132	
Richland	A. C. Welsh	M. E. Douglas	Geo. A. Clougston	Mansfield	Oct. 5, 6, 7			159	
Sandusky		J. P. Elderkin, Jr.	J. W. Beery	Fremont	Sept. 17, 18, 19	1,213 85	951 00		
Seneca	E. T. Stickney	A. G. Sneath	G. W. Bachman	Tiffin	Sept. 29, 30, Oct. 1, 2	1,990 04	2,064 22		
Shelby	John Duncan	O. J. Taylor	James Smyth	Sidney	Sept. 1, 2, 3	540 57	528 57	225	123
Stark	Levi Stump	M. D. Harter	J. F. Clark	Canton	Oct. 7, 8, 9	3,032 28	2,520 08		
Summit	J. Park Alexander			Akron	Sept. 29, 30, Oct. 1, 2	2,913 13	1,774 76	810	
Trumbull	D. Harrington	A. D. Webb	H. F. Austin	Oak Grove		2,234 98	1,650 98		
Tuscarawas.	Geo. Kikn	G. B. Deardorf	E. S. Slingluff	Canal Dover	Sept. 30, Oct. 1, 2	2,189 90		812	788
Union	Jas. W. Robinson.	Wm. H. Robb	L. Piper	Marysville	Oct. 14, 15, 16	3,417 72	3,437 62		
Van Wert	N. Hattery	A. W. Baker	M. Mahan		Oct. 7, 8, 9	381 40	381 40		
Warren	Jno. H. Evans	Chas. A. Smith	Geo. W. Carey	Lebanon	Sept. 16, 17, 18	3,108 12	3,090 11	1,440	825
Washington	Jno. Newton	C. K. Leonard	Wm. B. Thomas	Marietta	Oct. 7, 8	3,347 67	2,915 98		453
Wayne		David Clark	C. S. Frost	Wooster					
Williams				Bryan	Sept. 29, 30, Oct. 1.			370	925
Wood		H. L. Walker	J. W. Smith						
Wyandot	J. S. Rappee		H. A. Hoyt	UpperSandusky				266	

REPORTS OF COUNTY SOCIETIES.

ALLEN COUNTY.

There were no competitors for premiums on crops; consequently no statements were offered.

The Society held one meeting on the 15th, 16th, 17th and 18th days of September, 1868, but, owing to a variety of causes, was not very largely attended. The number of its members is two hundred and fifty-three—that is, so many different persons competed for premiums. The Society abandoned for that fair the system of family tickets, and consequently the exact number of members cannot be reached. The directors still hope that, if they have favorable weather during the fair to be held in the fall of 1869, they will meet with success.

ASHTABULA COUNTY.

No statements of competitors for premiums on crops and other improvements in agriculture on file with the Society.

The Society is prosperous, and reports 453 members. The last annual fair was a success, the exhibition in all its departments good, especially of cattle.

The show of Shorthorn stock does decided credit to the county.

We could not have had a better season for farmers than the past one has been. All crops have been good, and not any materially injured by insects or otherwise; crop of apples large; yield of peaches and other fruit larger than ordinarily. The wheat crop has been especially good.

ATHENS COUNTY.

The county of Athens, although presenting that rough and uneven surface characteristic of southeastern Ohio, possesses a quality of soil that will compare favorably with most counties in the State, while beneath that uninviting surface lie imbedded rich deposits of coal, salt, and minerals of untold value. The completion of the Hocking Valley Railroad, now being constructed, will form another and very important outlet to the imbedded wealth of this county.

The principal crops raised in this county are wheat, corn and hay, with some oats, potatoes, sorghum, tobacco, beans, &c. The unusual drouth of 1867 so delayed the sowing of the wheat crop that much of it was done in the latter part of October, and, as a consequence, the growing grain had not made sufficient growth and root to withstand the freezing and thawing of the subsequent winter. A large part of it was killed outright, and in many instances whole fields were re-plowed and planted in corn in the spring; while much that was left standing produced but a meagre crop. Consequently the wheat crop of our county is barely requisite for home consumption, furnishing none for shipment. Thus, for two or three years in succession, has our wheat crop been comparatively a failure; yet, nothing daunted, our farmers keep trying and will succeed ultimately, as we hope, in raising a crop of wheat.

The number of persons purchasing family tickets, and thus becoming members of the Society, were five hundred and twenty-seven. There was but one competitor on grain crops, and he not complying with the requirements of the law in reference to tillage, the application was rejected for informality. The Society one year ago adopted the plan of electing the directors for the term of two years, and think it an improvement. The Society also, at its last meeting, adopted a new constitution and by-laws, making such changes as the wants of the Society seemed to require.

In conclusion, we may state that the most noticeable characteristics of the past season were, first, the unprecedented hot weather of the month of July (the thermometer indicating for many days in succession from 90 to 100 degrees of heat), causing much damage to fruit and great loss of life by sunstroke; and second, a visitation of grasshoppers in many localities in this county, doing much damage to vegetation, and injuring, and in some instances killing, young fruit trees.

Yet, notwithstanding these adversities, our people are full of hope, and are fast developing our vast agricultural, mechanical and manufacturing resources, and steadily advancing in industry, wealth and prosperity.

Not much attention has been given to the raising of fine-blooded horses, our heavy roads, clay soil and numerous hills rendering strong horses with good bone of more utility than light, though fast, horses.

The eighteenth annual fair of our County Agricultural Society was held at the Society's grounds, near Athens, on Thursday and Friday, October 15th and 16th. The fair was appointed for the 1st and 2d days of October, but the unprecedented rains which occurred in the month of September so delayed the fall work of our farmers that a change in the time of holding the fair seemed necessary. The managers, therefore, one week previous to the time appointed for the fair, postponed it to the 15th and 16th. Much anxiety was felt by the directors lest the weather should prove unpropitious, but as the bright sun came out on the morning of the fair, dispelling the clouds and the fog, the people came out also, bringing with them a goodly number of articles for exhibition—and the fair was a success.

The show of stock of all kinds was above the average of former years. Our Society, in several classes, admit articles from other counties, and stock was exhibited from the adjoining counties of Washington, Morgan and Hocking, all of which added to the interest of the occasion. Owing to the partial failure of the fruit crop, the exhibition in that department was not equal to former years; but in horticultural products the exhibition was far superior to any ever witnessed at our fair. The show of mechanical, household and dairy products were respectable, but not up to the standard which we hope to see them hereafter. Grapes, pears, cherries and plums were nearly failures.

The uneven surface and the adaptation of our hills to grazing purposes, render stock raising rather than grain raising the leading business of this county.

Sheep raising and wool growing have heretofore received much attention, but the low price of wool and sheep has so discouraged our farmers that the mania which prevailed three years ago to obtain a flock of sheep at any price is now completely reversed, and a determination to get rid of the sheep at any or *no* price is manifest in the same parties. As a consequence, between neglect, slaughter and sale, our flocks have suffered a fearful diminution; insomuch that the number being kept at this time cannot exceed more than one-half the number kept two years ago. Those being kept now, however, are generally in good condition, and with a good coat of grass on the ground and an abundant corn crop, we may reasonably expect that no such losses will occur in the sheep flocks of this county next spring as did last. Sheep are almost universally healthy with us, such things as "foot-rot," "grub in the head," "scab," and such diseases being nearly unknown. French merinos and their grades are the kinds usually kept, with occasionally a flock of Cotswolds or Leicesters.

Cattle and hogs are also among the important productions, and for the same reasons that many are reducing their sheep flocks they are increasing their number of cattle and hogs, and that is, "it pays." Shorthorn cattle and Chester White and China hogs are the favorites with our people.

The crop of corn was good, and although no means are available for obtaining the number of bushels per acre, perhaps an average of forty-five bushels would be a fair estimate. This is fed mainly to stock, consisting of cattle, hogs and sheep, some of which are slaughtered in our own county, but much the larger number are sold on foot and shipped, by railroad, to Baltimore.

The oat crop was a fair average one, but as our people regard it as a crop of only secondary importance, and raise it only for home consumption, not very much account is made of it.

Potatoes yielded a fair average crop, and were secured in good condition, with no symptoms of rot or disease. The potato bugs did but little damage.

The yield of hay per acre, although falling far short in quantity of the yield of 1867, in quality was far superior.

A good deal of interest has been taken in fruit culture in this county within a few years, but with rather indifferent success. Between the ravages of the rabbits, mice, moles, borers, caterpillars, insects, worms and frost, fruit raising has become a very uncertain business. Our crop of peaches this year gave promise of being an abundant one, until a few weeks previous to the time of ripening, when rot (superinduced, as is supposed, by the unexampled hot weather of July followed by rain) blighted the hopes of many fruit growers, and utterly destroyed full three fourths of the crop. Apples matured in some localities, but the yield throughout the county did not reach more than one fourth of a crop.

BELMONT COUNTY.

The twentieth annual fair of the Belmont County Agricultural Society was attempted to be held September 23d, 24th, and 25th, 1868, but had to be postponed on account of protracted wet weather for a period of two weeks, when it was finally held October 7th, 8th and 9th. But the weather again was unfavorable, there being some rain at the commencement, and cloudy and cold throughout. This very materially interfered with the success of the exhibition, as well as receipts.

Premiums were offered, as contemplated by law, for field crops and best managed farm, but no entries were made for competition. This is to be regretted, as it indicates a want of interest in one of the great leading objects of an agricultural fair, the cultivation of the soil.

The exhibition of horses was very good, and of sheep it was perhaps never excelled in the county. Cattle and hogs were in fair supply. The halls were not as well filled as usual, especially Floral Hall. The cold damp weather was well calculated to produce this effect.

The season for planting in 1868 was wet, succeeded with unusually dry weather in June, July and August, except in a few localities. The consequence was, a slightly diminished corn crop, say one fourth less than the average.

The wheat crop was not seriously affected by the drouth, and was better than an average for the last few years. The early sowed oats were good, but the late sowing was affected by the drouth. Crop a little less than average.

The hay crop, although affected by the drouth, would not fall far short of an average yield. Potatoes badly affected by the dry weather; yield not over half crop, and average quality inferior.

Sorghum has been cultivated in this county in considerable quantities for the past seven or eight years, for home consumption, but its production is gradually diminishing. The crop this year is light.

The fruit crop, upon the whole, was less than average. Apples about half crop, peaches average, and small fruits less than average. The cultivation of the grape is becoming more and more popular, and, although not fully demonstrated, it is believed our soil and climate are well adapted to this important branch of horticulture. The assessors' returns for 1868, show an area of 154 acres in grapes. This acreage is largely distributed over the county.

The tobacco crop is annually growing less in this county. The custom has been to grow it on new lands, and as these become scarce the crop is diminished. The business will not probably be continued for many years, nor is it desirable that it should.

The stock business seems largely to absorb the attention of our agriculturists. And this is not to be wondered at, when we consider the adaptability of our soil to the natural production of blue grass, and the uneven surface of most of our lands.

The sheep and wool business, notwithstanding the depression in the market, has been pursued with an even tenor. No panic has existed here, such as prevailed in some of the counties. The increase of stock will doubtless be arrested, but no purpose is entertained of abandoning the pursuit. The causes which produced the depression will pass off, and the markets right up again. It may never become very profitable to raise sheep and wool on low, flat, wet lands, but Belmont county is not seriously afflicted in that way.

Our mechanical and manufacturing interests are in a flourishing condition, and rapidly increasing. Our natural facilities for manufacturing cannot be excelled, if equaled, in the State.

BROWN COUNTY.

The nineteenth annual fair of Brown County Agricultural Society was held on the fair grounds belonging to the Society, adjoining the village of Georgetown, on the 15th, 16th, 17th and 18th days of September, 1868. The fair opened under very unfavorable circumstances; it had been raining almost constantly for eight or ten days previous to our commencement day, on account of which some of our neighboring agricultural societies, whose fairs were fixed to be held during the week preceding ours, were compelled to adjourn for better weather. Reports got into circulation that our fair also had been postponed to a future time, and to the report referred to, the attendance was not as large as it would have been under more favorable circumstances. The first day found the roads muddy and the fair grounds very wet and soft, with heavy clouds above threatening rain again; owing to this state of things the number of entries made during the first day was few. The morning of the second day, however, being bright and clear, brought out the friends of the Society in full force with their long lists of articles and animals, to enter for exhibition. At the close of this day the number of entries amounted to near six hundred, with a list of over three hundred articles not entered, to commence the third day with. On this day there was a grand rally of the people, which made it the bright day of the fair; the weather being fine brought out a large attendance, but not equal to the preceding day; every body seemed to enjoy themselves, and unanimously pronounced the fair a grand success. The whole number of entries made was 1008, being greater than at any previous fair, although the attendance was not as large as last year, as the receipts showed. Of stock put on exhibition, horses came fully up to the show of last year; the whole number of entries made, of all classes and ages, was 193. Of cattle the show was very moderate, not coming up to last year; of mules it was about an average of former years; of sheep not quite so good as the year previous; of swine it was better than last year; of farm implements it was pronounced the best display ever made at our fair. In Floral Hall the display of domestic manufactures, as to variety and quality, was equal to any display ever made at our fairs. Of farm products the number of entries was about equal to last year, but was made up of a greater variety and better quality. The display of green fruits was very moderate, as most classes of fruit had been cut off by late frosts, with the exception of early small fruits; in regard to canned and other fruits, our ladies, who are always providing for an emergency, were on hand with their usual supply and variety, put up in all the styles known to modern times, which made the display very nearly equal to that of former good fruit seasons. In the floral department of the Hall, the ladies excelled themselves in their display of flowers and plants; the opinion generally expressed was, that it equaled any former display made at our fairs. The display of quilts has scarcely ever been excelled; all kinds of fancy, ornamental and useful articles, gotten up by the ingenuity and skill of ladies, were to be seen and admired by all classes of visitors. In concluding this part of our report, the Board deem it but just to say, that without the co-operation of the ladies of Brown county in contributing to, and management of, Floral Hall, their best efforts would be a failure.

Of field crops, there were no entries made worthy of note.

The principal crops produced in Brown county are wheat, corn, rye, oats, tobacco, potatoes and grapes.

The corn crop of 1868 was larger than that of 1867, but not of so good a quality, owing to the extreme wet weather during the fall, which prevented it from drying out as it should, which cause produced a large amount of soft and rotten corn; it is very difficult to estimate the yield of any crop correctly, but from the best estimates we can get, the following may be given as something near the yield of 1868:

CORN—1,100,000 bushels, a yield of about 32 bushels per acre.

WHEAT.—The number of acres sown was greater than the previous years; the yield will not be much greater per acre than that produced in 1867, averaging only about 10 bushels per acre, which will make the crop of 1868 not far from 175,000 bushels.

OATS.—The crop of 1868 will be larger than that of 1867; probable crop about 250,000 bushels, being about 25 bushels per acre.

RYE.—The crop of 1868 is about the same as that produced the preceding year, 20,000 bushels, being only about 10 bushels per acre.

POTATOES.—The crop is larger than that produced last year—say about 35,000 bushels, a yield of 50 bushels per acre.

TOBACCO.—The crop of 1868 promised to be much greater than the crop of 1867, but a rainy season about cutting time injured it considerably; still, it is thought the crop will weigh out more pounds than the crop of last year. Our estimate for 1868 is 2,300,000 lbs.

The grape crop, as usual in this part of the State, was cut short by mildew and rot. As a great many persons owning vineyards have been selling their grapes, the number of gallons of wine produced is much less than it would have been if such had not been the case. The yield, of gallons of wine, will not be far from 20,000 gallons.

In concluding our report, we can safely say that our Society is in a flourishing condition, and upon a solid basis. Our receipts for 1868 fell a trifle short of paying all the expenses of our fair, but having a respectable balance in the treasury, we were able to pay all premiums and other expenses of the Society. We found it necessary to expend near two hundred dollars this year on repairs to the fences, which still leaves us with a respectable fund in the hands of the treasurer. The receipts this year, from all sources, amounted to $1,503.05. The number of memberships taken this year was 492, being a few less than the preceding year.

BUTLER COUNTY.

The eighteenth annual fair of the Butler County Agricultural Society was held at their fair grounds, near the city of Hamilton, on the 6th, 7th, 8th and 9th days of October, 1868. It was, in all its appointments and surroundings, an entire success, and fully realized the most sanguine expectations of the board of managers, and worthy of the enterprise and public spirit so characteristic of the farmers and mechanics of the Miami valley.

Although it would appear that all the departments were fully represented, yet in one or two of the classes, in the different departments, there has been a partial and, in some localities, an entire failure, especially in fruit and grain—limited, however, to apples and wheat For instance, Mr. B. Carr, of Fairfield township, entered for premium on field crops, and received a premium of $15, for a field of 9 7-100 acres of wheat, averaging 28 bush. and 39 lbs. per acre; yet as a crop of wheat, throughout the county, the wheat crop did not average over 12 bushels per acre, yet in all the other grains, especially of corn, there was an unusual yield. Again: Although there were on exhibition at our fair a few specimens of extra fine apples, yet as a crop of apples, throughout the county, it may be said to be an entire failure; and yet in all other fruit, especially small fruit, there has been more than ordinary abundance. Nor have these failures been confined to any particular locations or quality of soils, or to any particular culture, or to any particular variety of fruit or kind of seed—the *books* to the contrary notwithstanding.

CARROLL COUNTY.

The Carroll County Agricultural Society held their eighteenth annual fair on their new grounds, on the 14th, 15th and 16th days of October, 1868. This being the second exhibition on our new fair grounds, much anxiety was manifested for its success, and every preparation made by the Board for the accommodation of all kinds of exhibiters. Too much praise cannot be given to our worthy President, E. McGuire, for his untiring energy and care in fitting up the grounds and making them comfortable and attractive. Under his supervision, several new stables were added to the Horse department; pens for sheep and hogs were increased in number; the track greatly improved; wells dug and put in complete order; a great number of cattle stalls erected, and many other conveniences, such as refreshment stands, seats, etc., making it one of the most pleasant, convenient and attractive little fair grounds in Ohio.

The exhibition of this year will ever be a memorable one in the history of Carroll county agriculture. The effort was a complete success. The attendance on the third day of the fair was believed to be the largest gathering of people ever held in Carroll county. All classes, we believe, were represented, and in most a very lively competition was manifested. There was a decided improvement in the horse show over former years, which resulted, most likely, from the increased amount of premiums offered in this department, three hundred dollars having been paid out in premiums awarded to this class alone. We are of the opinion that the exhibition of horses will compare favorably with any county show in the State.

Mules of all ages were on exhibition, some of which seemed to possess all the qualities desirable in a mule. The swine show was moderate; cattle very good; sheep not so good as in former years, owing in part, perhaps, to the low price of wool this year—farmers not caring to interest themselves in a *great exhibition* of wool, as was their custom, under such unfavorable prospects for the sale of wool.

The exhibition of Poultry we have never seen excelled at any county fair, about twenty varieties having been entered for competition.

The Floral Hall was well filled and tastefully arranged. The list of premiums offered embraced every branch of industry, and amounted to about one thousand dollars, of which amount about six hundred and fifty were actually paid out in premiums awarded.

Our farmers pay but little attention, comparatively, to grain growing. Their attention has been turned almost exclusively to the production of sheep and wool. Barely enough grain is put out to bread our people and provide for the stock. Wheat. rye, corn, oats, barley, are all raised to a greater or less extent, but without any pretension to profit except as it goes into the production of wool or the improvement of stock.

Corn is the leading product in the grain line, amounting, last year, to about 500,000 bushels, averaging about 45 bushels to the acre.

We think the Carroll County Agricultural Society is exerting a beneficial influence upon the farmer, the stock-grower and producer, and the manufacturer of the county. Our Society has 660 members, and is in a very flourishing condition, financially and otherwise. We had but little competition on field crops, and no statements in regard to the mode of tillage. Buckwheat was a failure, owing to the dry weather at that season of the year; also potatoes, in part, from dry weather and the potato bug.

CHAMPAIGN COUNTY.

At the election of officers and managers in January last, there was an effort made to change our fee for membership, by reducing it from one dollar and fifty cents to one dollar, and allowing all persons to become members by paying that amount on or preceding the first day of June, and after that date sell no memberships, but charge each person 25 cts. for each admission to the grounds. But this proposition failed, and the rate of membership was left as before, $1.50; and fees amounting to $98.00 were paid for memberships at the election.

Our fair, as advertised, was held on the two last days of September and the first two days of October. The weather was beautiful and the attendance large. Each day the grounds swarmed with the fair of Champaign and not a few of our neighbor counties. All seemed to have met together for one great and grand reunion—a harvest feast. Our Board, desiring to adopt any consistent and honorable means by which the revenues of the Society might be increased, solicited subscriptions in articles and money to the value of nearly $2,000. Tickets were then sold at $1.00 each, and the articles donated were distributed by lot to the ticket holders. The tickets not having been sold as fast as was expected, the drawing could not take place on Friday, the last day of the fair; consequently the Board continued the fair over Saturday, and in addition to the drawing, kept the classes of light harness and roadster horses, and also had a "slow mule race," all of which attracted much attention, and gave general satisfaction and merriment to the immense number of visitors in attendance, and it seemed the people were loth to leave the grounds because there was not yet another day of the week on which they could return and mingle together.

Every department of our fair was well patronized. Mechanics' Hall, Vegetable Hall and Floral Hall were each crowded to almost their entire capacity. The genius of the mechanic, the rewards for honest toil, and the fabrics of handiwork by fair hands in the respective Halls, was evidence that our people are composed of the right material and have the right sentiment. The Stock departments were each up to the standard of any former exhibition. The show of Shorthorns was in advance of former fairs, and exhibited the fact that much attention was being given to that class of stock.

Although the show of fine wooled Sheep was very large, there seems to be a falling off, and a tendency to breed large, coarse-wooled or longwooled sheep, more particularly on account of their being better adapted for feeding and shipping, while there is but a slight difference in the price of wool, at least not enough to justify the breeding of fine wools for that alone.

The total number of entries made at our fair was 1,200. The zealous disposition of our people to sustain our fairs does not seem in the least abated, but on the contrary, the interest steadily advances, and all seem to unite in the same feeling, that our county fairs must be sustained and kept up, no matter what the difficulties to be surmounted or expense to be incurred; and, so far as our knowledge extends, a Board having a constituency of this calibre to stimulate them never fail to succeed in their undertakings, and most generally retire from office with a clear conscience, satisfied that they have accomplished their work, and have the approbation of their constituents.

Our Board, for several years preceding 1868, commenced the year in debt; a dead load of debt had to be carried, and in our efforts to liquidate it it seemed that, year after year, it licked up the small surplus that the Society might have over and above its expenses—that it was destined to ruin us; but in 1867 we were fortunate enough, at the close of that annual fair, to have a sufficient surplus to relieve the Society of all its indebtedness, and the January (1868) statement showed a balance of $6.00 in the treasury, while the exhibit of the treasury of January, 1869, will show a surplus of $500 in the treasury.

The crops raised in the county, from the best information that we can get, were about as follows: The corn crop was extraordinary. The season was a very remarkably growing one, having frequent showers, yet dry weather sufficient to keep the corn free from weeds. It grew fast and matured early. The frost did not even damage the corn on the lowest grounds. It is thought the crop of the county will not average less than fifty-five bushels to the acre. Our wheat crop was a failure compared with the corn crop. In some localities it was hardly worth cutting, and the average for the county will fall short of ten bushels per acre. Barley was good, more than an average crop where raised, but less was sown than usual. Rye was a poor crop, and but little raised this year. Oats crop was heavy; will average not less than forty bushels per acre; the crop was more than ordinary—grew to a good height and filled well.

Very little Sorghum was raised, but those manufacturing the cane into molasses inform me that the yield of syrup is more, and of a better quality than usual. The Potato crop was generally good; no rot in any variety, so far as we have been able to ascertain. The hay crop, both clover and timothy, was heavy; the clover hay was generally cured and put up well, but the later rains injured much of the timothy hay, especially on the low lands.

The season being a very extraordinary one, vegetables of every kind grew perfect and in abundance. Apples were few, but generally of a good quality. There was a short bloom; the variety known as the Newtown Pippin were the best bearers the last season, and the fruit was the finest. The crop of Grapes was hardly an average crop in this vicinity. While the Hartford Prolific, Concord, Rogers No. 4 and Isabella were a success in some localities, in others they were a failure. In some localities insects were very destructive, while in others they were not. The Catawba did not ripen early enough, yet it is considered the most profitable and most prolific variety grown here. But we find, in seeking information on the grape subject, equally as many opinions as there are persons giving their attention to it. Each person growing grapes have their pet varieties, and peculiar notions as to cultivation, etc. The Peach crop throughout the county was very fine. Wherever there was a peach orchard or peach tree, peaches were found, and generally of a good quality.

There is a steady advance in horticulture, and we are glad to see it. Heretofore but little public interest has been manifested in that particular department.

CLARKE COUNTY.

The present Board of the Clarke County Agricultural Society held their first meeting on the 13th day of February, 1868. The meetings have been well attended, and, as a general thing, very harmonious.

The actual amount of premiums awarded in the several classes, in addition to quite a number of diplomas, was $1901.

At the time of our fair—Sept. 8, 9, 10 and 11—was probably the most unfortunate week for agricultural societies that there was last fall; we postponed our trial of plows and plowing until October 6th. In consequence of almost incessant rain, we continued our fair over Saturday, the 12th, and Monday and Tuesday, 14th and 15th. Although there was not a clear day during the seven days of the fair, there were entries and competition in all classes, except field crops.

On October the 6th, our Board met on the farm of Mr. L. B. Sprague, in Harmony township, and proceeded with a field trial of plows, drills, harrows, corn plows, road-scrapers, plow teams, plowmen and plow-boys, which was continued for two days, and was conceded by all present, and exhibiters in particular, to have been the most thorough trial that was ever held in the State.

We look upon our last fair as a success, under difficulties.

We have made considerable improvements, in the past year, in the way of buildings, by an addition to the Mechanics' Hall, and a very neat and substantial tenant-house, both at a cost of $2300; also, fencing and other repairs to the amount of $300—making a total of $2600 in new buildings and repairs.

The membership of the Society amounts to 650.

The prospects of the Society for the future are good, with an increased interest in its welfare by all citizens of the county.

The principal crops raised in our county are corn, wheat, rye, oats, barley and hay The yield of each, per acre, was as follows: corn, 35 bushels, wheat 10, rye 20, oats 20, barley 35, and hay 1¼ tons.

The striking characteristics of the season were, a wet and late spring, with very heavy rains in June, which caused a great deal of corn to be planted over; consequently our yield of corn is short, from former years. Winter so far (Jan. 1, 1869) as fine as could be asked for, with little snow; splendid weather for feeding all kinds of stock.

There being no insects the present season of any consequence, to injure any of the above described crops, farmers, therefore, could not complain of this annoyance.

A great number of our sheep breeders have introduced long-wooled bucks into their flocks this season, with the expectation of reaping a good harvest in the future with their "Delaine" and "Combing," wools. Our county has flocks of full blood Spanish or American Merino, Cotswold, Leicester and Southdown sheep, which will be kept in their purity for years to come.

In the cattle, horse and hog departments our county is not behind, but still on the increase.

In addition to keeping up our reputation in agriculture and stock growing, we are manufacturing almost all kinds of agricultural implements that are in use in the United States.

CLERMONT COUNTY.

The Clermont County Agricultural Society held its twentieth annual fair at Boston, in September. Fruit culture is a prominent business with our citizens, and the exhibition of apples, peaches, pears, quinces and grapes was such as to impress more strongly than ever before upon those who still are engaged in the "good old way their fathers trod," that fruit-growing is destined to usurp the place so long held by "corn and hogs."

The stock show generally was up to the standard of previous years. Clermont, in the raising of mules, stands second in the State, and this part of the exhibtion was very fine indeed. The show of swine was only moderate, but there were on exhibition several animals of superior merit. Sheep raising has for the last few years been at a discount, but there were present some Spanish Merinos that are hard to be excelled anywhere.

The show in Vegetable Hall was fine indeed. All the late varieties of potatoes were on the tables, and some of them attracted a great deal of attention. The growing of early potatoes for the Cincinnati market has of late years been an item of great wealth to our county, and our farmers are disposed to keep up with the demand of the times, and all the late and popular varieties are grown by the acre. The growth of the fruit business in our county has been wonderful, and the success that has attended the pioneers in the business has encouraged others to fall in, and for the last few years the shipments of peaches and the small fruits from different points in our county to Cincinnati has amounted to a great many thousands of bushels.

The June exhibition of our Society was interrupted by rain, but the show of strawberries would have compared very favorably with that of the Cincinnati Horticultural Society, and, indeed, some of the leading contributors of that excellent organization are also members of our Society. The meetings of the Board have been promptly attended, and all have labored with an eye single to the good of the Society and the promotion of agriculture and its kindred subjects. The total receipts for the year were in the neighborhood of two thousand dollars, and the net profits something near five hundred dollars. The number of entries of articles for exhibition was about eighteen hundred, and the number of premiums awarded near five hundred. Two years ago the Board increased the terms of membership from one dollar to one dollar and fifty cents. The "old fogies" cried out against the innovation, but the Board have persevered against all opposition, and for the coming time more pleasant sailing is anticipated.

Our county is in the front rank in all that makes up the material prosperity of the land, and to its agricultural and horticultural societies can be attributed much of that prosperity.

CLINTON COUNTY.

The Agricultural Society of our county is in a flourishing and prosperous condition, composed of about five hundred members, all of whom take a lively interest in the agricultural growth and improvement of our county. On account of the inclemency of the weather the past year, having to make one adjournment of our fair, and then the weather being very unfavorable, our financial report is consequently unsatisfactory to us—which, if you desire, we will forward as soon as practicable. On account of the late day at which we held our fair, we are unable to report at this time. The number of entries made at our last fair was 561. The principal crops raised in this county are corn, wheat, rye, oats, barley, flax and potatoes, of all of which there has been a good average yield the past season, without harm by insects.

COLUMBIANA COUNTY.

The nineteenth annual exhibition of this Society was held upon the fair grounds near New Lisbon, on Wednesday, Thursday, Friday and Saturday, September 23d, 24th, 25th and 26th, 1868. The entries in the horse department numbered 405; in the cattle, 46; sheep, 112; swine, 25; also, 19 jacks and mules, making a total in the stock department of 607. The other departments were well represented, especially those of seeds and vegetables, in which there were 217 entries. Total amount of entries, 1,442. The fruit upon exhibition was very fine, and fully equal in quantity and quality to that of any previous year. Floral Hall was filled to overflowing with the beautiful in nature and art, and excited the admiration of all.

The number of members, as shown by the books of the Society for this year, is 400. We consider our Society in a highly flourishing condition, being entirely free from debt, which may be attributed to the untiring exertions of the Board. There has been an increased interest awakened, that, beyond all doubt, insures our future success.

Of farm implements there was a good exhibition, both in neatness and durability of construction. Of agricultural machinery we need not say a word, as it was there to speak for itself—a fact which we are pleased to record, since the scarcity of farm labor has made reapers, mowers, threshers, horse-rakes and other labor-saving machines indispensable to the farmers of this county.

In addition to the numerous articles presented for competition, those exhibited by the ladies added much to the interest of our fair. The many articles of domestic manufacture, the fine specimens of needlework and embroidery, flowers, preserved fruits, jellies, bread, butter and various other articles, not now remembered, were deemed highly meritorious of the premiums awarded.

There were five entries made under the head of field crops. But one of the parties complied with the State laws applicable to this class.

CRAWFORD COUNTY.

Crawford County Agricultural Society held its fair on the 6th, 7th, 8th and 9th days of October, on grounds owned by a joint stock association.

Rent paid for grounds present year	$962 00
Gross receipts	3,061 30
Gross expenditures	2,963 16
Cash on hand	$108 14

Exhibition of stock, agricultural implements, fancy articles, &c., &c., as large and of as good quality as could, under the circumstances, have been expected.

Number of members of Society, 315. Think that the interests of agriculture will be greatly promoted by the organization.

The principal crops of the county are wheat, corn, oats, hay and potatoes.

Wheat crop about one-half the average yield; injured by drouth in the fall of 1867. Corn crop much injured by grasshoppers—about half a crop; oats almost a failure from same cause. Potato crop about an average. Apple crop excellent, and large amounts exported—probably 30,000 barrels.

CUYAHOGA COUNTY.

The Cuyahoga County Agricultural Society has continued its usual labors during the year 1868; holding its annual exhibition on the 8th, 9th, 10th and 11th days of September, with the usual accompaniment of rain, mud and bad luck. The county commissioners appropriated one thousand dollars, for the use of the Society, which, with an equal amount raised among the members, has placed the Society on a healthy basis for future operations.

DARKE COUNTY.

The thirteenth annual exhibition of the Darke County Agricultural Society was held on the grounds of the Society, at Greenville, on Sept. 30th, and 1st, 2d and 3d days of October, 1868.

The first and second days of the fair the weather was very unfavorable; there was some rain and very bad under foot, which made the attendance small. But on the evening of the second day it cleared off, and on the third and fourth days the attendance was large.

The exhibition of horses was good, equal to any former fair; but the show of cattle, hogs and sheep was not large, owing to the bad condition of the roads and weather, but what there was was very good, showing a marked improvement in stock compared with a few years ago.

The domestic manufactures and Fine Art Hall was well filled, making a fine display, showing that the ladies contribute their share in making our fairs interesting, and much praise is due them for the interest they have taken in this as well as all our former fairs.

The people of this county are getting awake to the importance of draining; the majority of underdraining is now done with tiling. We have four tile factories in this county, and they hardly supply the demand; and, besides, there is some underdraining done with timber. Thousands of acres of land, once thought to be worthless, now, by draining, has become the most valuable land we have; besides, the chills and fever, once very common, now is scarcely known.

Our farmers have a pride in using the best and most approved agricultural implements now in use, such as reapers, mowers, separators, plows, grain drills, &c., &c., introduced into husbandry within the last few years.

Also, let me mention the sewing and knitting machines, which have become almost an indispensable article in every family, especially the sewing machine.

Our Society is becoming one of the permanent institutions of our county; it owns a tract of nineteen acres of land, with some improvements thereon, within the corporate limits of the town of Greenville, and is out of debt and has a surplus, as you will see by reference to the treasurer's report. It numbers six hundred and seventy-five members.

The principal crops of this county are wheat, rye, corn, oats, barley, flax-seed and potatoes; there is considerable of hay made also.

The crops this year have been very good, except wheat, which was about two-thirds of a crop. The corn crop was good, fully an average; also oats, flax and potatoes. Barley not much sowed; it has been rather an uncertain crop for a few years past.

Stock, such as cattle, hogs and sheep, are raised in considerable quantities for other markets, our railroad facilities being very good for shipment. We have four railroads running through our county.

It may not be amiss to mention, in this report, that the people of this county are availing themselves of the provisions of the law, and are making nearly every main road a good gravel pike; there have been several already completed, and quite a number fully under way.

DELAWARE COUNTY.

The board of managers of the Delaware County Agricultural Society beg leave to make this their twenty-first annual report. We have reason to congratulate ourselves on the prospect of the increased prosperity and usefulness of the Society.

Our annual fair was held on the 6th, 7th, 8th and 9th days of October; the weather was fine, the attendance, as usual, large, and the fair a success. The show of cattle, horses, sheep and hogs was good, and in most of these articles there was a manifest improvement over former years. Our receipts were $2,948.23, for the year.

During the past season, the board concluded to enlarge the grounds of the Society, and accordingly purchased eleven acres of ground, on the east of the old grounds, at a cost of $3,300; and it has been inclosed with a substantial fence.

The principal crops of the county are wheat, corn, oats, potatoes and flax (for the seed and lint). Wheat the past season was better than for three or four years previous; corn unprecedentedly heavy—over an average; oats less than an average; potatoes an average crop; flax crop very large.

Our farmers are now beginning to pay more attention to ditching, that most valuable improvement of moist lands. We have now two Tile Drain manufactories in successful operation, and all their efforts will not supply the demand.

ERIE COUNTY.

The tenth annual fair of the Erie County Agricultural Society was held on the Society's grounds, at Sandusky, on the 30th of September, October 1st, 2d, 3d and 4th, 1868. Our entries were larger than we had reason to expect under the circumstances.

Number of members over 700.

We give membership tickets, admitting a member and his wife during the fair, for one dollar; single tickets, 25 cents.

The weather was quite unfavorable, it having rained before and during the fair more or less, except the last day, which was clear; the roads very bad. Notwithstanding the many evils the fair was a success. The people came out in good numbers; but the attendance was not as large as it would have been if we had had fair weather.

We were very fortunate in having the fourth day; our experience has proved, during the last two years, that it is advisable to hold our fair four days.

The weather is a very important consideration in the success of a fair. At our last annual meeting a resolution was passed, that in case of bad weather or other unforseen cause our funds are short, we pay the premiums *pro rata*, according to our receipts, next year.

STOCK — HORSES.—The show of horses was fine, attracting considerable attention as usual.

CATTLE.—The cattle on exhibition was not large in number; some of them fair stock for this section. We expect to bring out a larger number and better stock next year, by adding over two hundred dollars to our premium list.

SHEEP.—We had a large show of Spanish Merinos, some of superior quality, brought from Vermont. There was not a good representation of Leicesters and Cotswolds, but a few good Combing-wool sheep.

SWINE.—Was well represented by quite a number of some of the best breeds. Some fine Chester Whites, from a distance; several sales were effected, which will be of great advantage to this county.

GRAIN DEPARTMENT.—A large amount of grain, of superior quality, on exhibition.

REPORT OF GRAIN CROP — WHEAT.—More than the usual amount of wheat sown; injured considerably by the hot weather, red rust, and some by the wheat midge. 8,000 acres; average per acre about 13 bushels.

CORN.—Largely planted, yielding a fair crop in the eastern portion of the county; the western part more injured by the drouth. 475,000 acres; average per acre 38 bushels.

OATS.—About the usual amount sown; product only medium quality. Yield injured seriously by the drouth and grasshoppers; some fields nearly ruined. 14,000 acres; average per acre 22 bushels.

Barley.—Much injured by the drouth and hot weather; a small amount sown, with a poor yield and light grain. 900 acres; average 17 bushels per acre.

Meadow.—The usual amount of land in meadow; crops medium. The hay generally secured in good order, and of good quality. 15,000 acres; 18,000 tons.

Vegetables.—Notwithstanding the dry season our vegetable tables were well filled, and of good quality.

Potatoes.—A fair yield, of good quality, in the eastern portion of the county, with a poor crop in the western part. 1,700 acres; average 90 bushels per acre.

Fruit.—As usual a large display, of fair quality, although the season was unfavorable. 3,000 acres orchard; product, 75,000 bushels.

Grapes.—Nearly a failure; about 100,000 gallons wine made.

Peaches nearly a failure; small fruits only a medium crop.

Mechanics' Hall was well filled with useful articles, of every description, many of superior workmanship. The exhibiters deserve much credit in bringing them out in so unfavorable weather.

The display of farm implements, carriages, &c., was of great variety, superior quality, and admired by the farmers.

Floral Hall, under the charge of our ladies, was never more finely decorated and filled with the useful and beautiful work of our ladies; flowers, &c., too numerous to mention, were the centre of attraction, and won the admiration of all.

The Society is in a prosperous condition, nearly out of debt: will increase the premium list to over $2,000 next fair, hoping to advance the agricultural interests of the county.

We also take pleasure in reporting the agriculture of Erie county improving; increased attention paid to manure; higher cultivation given to the land, with a corresponding increase of crops, but still room for great improvement.

In regard to insects, we report with pleasure the wheat midge decreasing, but are sorry to say most other insects injurious to our crops are on the increase, especially the grasshopper, which has done a large amount of damage this season.

This year (1868) has been remarkable for great extremes. Cold winter—mercury 11 degrees below zero on the morning of the 2d of February; cold spring; very hot summer—at one time mercury 96 two days in succession; cold September, with a hard freeze on the 9th of October on the main land, which spoiled the hard-shell Hubbard squash; hard frost on the Island the 17th of October, which is unusual. The combined causes have spoiled our grape crop, leaf mildew, the worst disease.

Erie County Agricultural Excursion.—The annual steamboat excursion of the Erie County Agricultural Society came off on the 14th inst., and was a decided success in all respects. We chartered the *Evening Star* and the *Eighth Ohio*, two of the best excursion boats on the Lake, with the Berlin Band (martial music), Huron Brass Band, and Hollister's Cotillion Band. We had some twelve or fourteen hundred persons on board the boats—decidedly the largest excursion of the season. Gross receipts amounting to the sum of $673.21; expenses, $418.44—net proceeds, $254.77.

The day was most beautiful and the Lake as smooth as a sea of glass. It was a good sight to see the crowds of farmers and their families come aboard at Vermilion, Huron and Sandusky, until the boats had a good load. Every body appeared to enjoy themselves. We had no grumblers aboard, and not the slightest accident to mar the occasion. Many of the young people spent a portion of their time very pleasantly in dancing, and they had fine music for that purpose. Politics was not introduced, but all participated in the glorious cause of agriculture, which is paramount to all others.

Our intention, from the first excursion of the Society, was to have an annual steamboat excursion as much as an annual fair, and this shows that they are well sustained. All classes have their excursion on our beautiful Lake, why not the farmers? It is a mistake to think that it is a loss of time in attending these excursions; we farmers have to work very hard at this season of the year, and it is necessary for us to have some relaxation from work, and good for us to get together and have a friendly shake of the hand, and compare notes generally; we always learn something at these meetings.

FAIRFIELD COUNTY.

At the last annual meeting the Society adopted a new constitution, to conform with the present laws and rules of the State Board, and under it we have a board of managers, composed of one member from each township in the county, and one director.

Our fair was held October 7th, 8th and 9th, was well attended and financially a success, though not quite up to last year, the receipts being $2,707.07, which was $172.53 less that the year 1867. The number of entries in the different classes amounted to 726.

The Society has, within the past two years, paid off a heavy indebtedness, and is now out of debt, with a small balance in the Treasury. The grounds and buildings are in good order, and the prospects of the Society for future progress and usefulness are very good. The Society has 1,047 members.

Our principal crops are wheat, corn, oats, rye, buckwheat, barley, potatoes, tobacco and sorghum, and others usually raised in the southern and middle counties of Ohio.

It is estimated that for the year 1868 there was an increase in the acreage of wheat, corn, barley, potatoes and rye, and a decrease in buckwheat and sorghum. It would be impossible, at the present time, to give a correct estimate for the year 1868.

FRANKLIN COUNTY.

The annual meeting of the Society was held on the 2d of May, 1868, at the fair grounds.

The passage of a law levying a tax for the purchase of additional ground and making improvements thereon, by the Legislature at its session in January, 1868, led to the purchase of some forty-six acres lying directly east of the old grounds, at a cost of $15,000. A levy of a half mill was made for the year 1868, to be applied to the payment of the same. The Society took immediate possession of the new ground, fenced it in, built a large number of stalls, a neat office, and prepared a substantial track in time for the fair of 1868. The fair was held on the 6th, 7th, 8th and 9th of October, having been postponed on account of the weather from September. It was a glorious success, largely attended, and proved to be the best exhibition in the history of the Society. Every department, excepting those of cattle, swine, sheep and hogs, was remarkably well represented.

In order to meet the demands of the Society for funds in making the improvements on the grounds, loans were made to nearly $7,000. A committee of our own citizens was selected to arrange for laying out these grounds and beautifying them, so as to make it a splendid place of resort for the people. They were authorized to proceed in their work, and report to the Board at the earliest moment. The purchase of these additional forty-six acres may be regarded as an important movement, and will mark an era in the history of the Society.

No important matters have come before the Society, save the above, during the year.

The state of the crops may be stated in a word—good. The only real bad crop was that of potatoes, which proved almost entirely a failure. The early potatoes were very good, but the later ones bad. The varieties that seem to be cultivated mostly are, the

Early Goodrich, Buckeye, Shotwell, Peach Blow, South American and Harrison. The Neshannock has greatly deteriorated. The wheat, corn, oats and barley crops were excellent. The season was very propitious for these crops. Vegetables were very plenty, and the fruit crop was also very good, with but few exceptions. The weather was varied.

FULTON COUNTY.

The eleventh annual fair was held on the Society's grounds, one mile southwest of Ottokee, on Wednesday, Thursday and Friday, 9th, 10th and 11th of September. Our fair was not as much of a success as in former years. The first day of the fair it rained all day, and the second day nearly all day, but cleared off in the afternoon. The third day was pleasant, and there were a great many people out. There were but few entries made, and our list of members is not near so large as in former years, numbering two hundred and seventy-two. We were obliged to hold our fair earlier than in former years. The State Fair being so near us, and many wishing to attend, they were busy with their seeding, so that they could attend the State Fair, and did not bring out their stock and produce as in former years.

The receipts of the Society were more than we could expect under the circumstances. Owing to the purchasing of new grounds and fitting them up, the Society has got into debt, but I think, with the interest taken throughout the county in the advancement of agriculture, we will, in a year or two, be clear of debt and own forty acres of land well situated and well fitted up.

The principal crops raised in this county are wheat, corn, oats, buckwheat, rye and potatoes. There was a larger breadth of wheat sown in the fall of 1867 than for many years previous, and with good results. I think the wheat crop of this county for 1868 will amount to 150,000 bushels. The corn crop will amount to over half a million of bushels; oats, two hundred thousand bushels; buckwheat, fifty thousand bushels, and potatoes, two hundred thousand bushels. The average yield of wheat per acre, about ten bushels; of corn, forty; oats, twenty; buckwheat, fifteen, and potatoes one hundred.

There were some peculiar characteristics in the past seasons. The spring was cold and wet, and prevented many farmers getting their crops into the ground in proper season, but the hot, dry weather of July brought the crops forward, so that the farmers have to be thankful for full crops of all kinds, except fruit; and I have not known so general a failure of fruit of all kinds in Fulton county in the last twenty years, as the present. Cause—the warm weather of March, which started the buds, and extreme hard frosts in April. And as many farmers of this county have gone into orcharding quite extensively, it is quite a misfortune to many. I think we have one of the best fruit counties in the northwest.

The potato bug has made its appearance in some sections of this county, but not to any great extent.

GUERNSEY COUNTY.

Principal Crops.—Wheat, oats, corn, rye and potatoes.

Wheat.—The best crop we have had for some years. Average yield per acre, eight bushels. The breadth sown was not as large as in former years.

Oats.—The number of acres sown was large. Much injured by drouth and the ravages of grasshoppers. Average yield per acre, twenty bushels.

CORN.—Large breadth planted. Injured by drouth and grasshoppers. Average per acre, thirty-five bushels.

RYE.—Not much sown. Average per acre, ten bushels.

POTATOES.—Large breadth sown, and seriously injured by drouth and bugs. Average per acre where the crop was fair, sixty bushels.

GRASS.—Crop short. Average per acre, one ton.

CHARACTERISTICS OF SEASON.—Very dry. No rain from middle of May to 20th of September.

DESTRUCTIVE INSECTS.—Grasshoppers and potato bugs.

FRUIT.—Short crop.

No competition for premiums on crops. Number of members for 1868, 150.

HAMILTON COUNTY.

The fourteenth annual fair of the Hamilton County Agricultural Society was held at the fair grounds near Carthage, September 1st, 2d, 3d, 4th and 5th, 1868, and proved to be among the most successful ever held by the Society. The Treasurer has the recorded names of 514 members, and a number held members' tickets whose names were not on the list. No premiums had been offered for field crops, and we have no statements to record of improvements in tillage of ground or machinery. For five years, during the war, we held no fairs. Our grounds and buildings were used by Government as a mule camp, and we are now just beginning to get things in working order again. We have one of the largest and best amphitheatres for showing stock in the country, and our track of two-thirds of a mile is all that could be desired. We have now elected a Board of twelve managers, who will have their time of holding their office determined by lot at the first meeting of the new Board.

The entries in all departments show a large increase over former years, and the prospect is very fair for increased interest next year. The hundred dollar prize banner awarded to the township taking the largest number of premiums, excited considerable emulation, which will be increased next year, when the same banner is to be in competition. We allow no intoxicating drinks or immoral exhibitions; and by offering premiums to schools and scholars, for declamations, map drawing, penmanship, music, and riding and management of horse by girls and boys, and base ball, foot race and jumping for "Young America," we get the young folks interested, and the parents and friends come to see.

The crops of 1868 are not above the average of other years in this county. Fruit has been a failure, except perhaps pears. The sleet of last March was too much for the fruit buds. The *curculio* is the master of the stone fruit, and no preventive has yet been found. We suffered from freshets, that injured the crops on river and creek bottoms, and during haying and harvest the crops were considerably injured by wet. Barley is a failure. Corn will probably average 30 bushels per acre, 25,000 acres. Oats will probably average 18 bushels per acre, say 8,500 acres. Very little rye, buckwheat, flax or tobacco raised. Wheat will average 10 bushels on 8,000 acres. Hay is a paying crop, 1¼ tons average on 16,000 acres. Potatoes is a paying crop here, average 60 bushels on 6,000 acres. Our farmers do not pay the attention to clover that its real merit as a fertilizer deserves. Hamilton county farms rent well for gardens and dairies, and but little attention is bestowed on cattle, sheep or hogs.

HANCOCK COUNTY.

The Agricultural Society of this county sold, the present year, their old grounds, and purchased a tract of 20¼ acres of land on Main street and just outside the corporate limits of Findlay. It is a most beautiful piece of ground, six acres of which a grove of thrifty maples on a gentle eminence on the west side of the grounds, they fronting east. The Society succeeded in enclosing the front with a good, substantial fence, and erected temporary buildings for exhibition, and completed a half mile track for the exhibition of horses. Upon this new ground we held our seventeenth annual fair on the 15th, 16th and 17th days of October, and having offered a more general list, with increased premiums, the fair was in every sense a success. Having more commodious and better located grounds, we have every reason to hope that in the future our exhibitions will be second to none. At our last fair we had by far the best exhibition of stock we have ever had; that of horses was very fine, inferior to the State exhibition in numbers only.

HARRISON COUNTY.

The Harrison County Agricultural Society held its twenty-first annual fair at Cadiz, on the 30th day of September and 1st and 2d days of October. The first day of the fair was principally taken up in showing a few classes of horses, and making entries of articles and arranging them in the Floral Hall, preparatory to making a grand display. The amount of money received last year from all sources was $2,608; amount paid out for premiums and other necessary expenses, $2,700; leaving in debt $92.

A number of samples of crops were entered for premiums, but no crops were entered. There was a greater number of horses entered than ever before, and a great many of them were horses of a very good quality. The number of cattle, sheep and hogs not quite so good as usual, though each class was very well represented. The fruit crop in our county was not very large, yet there were some very fine specimens of the different kinds of fruit on exhibition, that attracted considerable attention.

We now have a membership belonging to this Society of 1,200. The crops raised in our county were wheat, corn, oats, hay and potatoes. The wheat crop this year was good for the amount sown. There was not as much sown as might have been, nor as would have been had the destructive insects not been so bad for several years past. This year nothing disturbed it. The corn crop was good, say about 45 bushels per acre. Oats, in this county, was of a pretty good quality, and a fair yield. Hay about an average crop, say one tun per acre. Potatoes almost a failure, except those that were planted very late, as the early planting was destroyed by dry weather.

Great credit is due the ladies of our town and county for the interest taken by them in the prosperity of our Society, manifested by their good taste and untiring labor in fitting up, adorning and arranging Floral Hall, which seemed to be the centre of attraction during the fair. In this hall were found household fabrics, needle and fancy work, of almost endless variety, photographs of every variety, oil paintings, flowers, both natural and artificial, sealed fruits of every variety, butter, jams and jellies in abundance, with a great many other things not mentioned. A great many kinds of agricultural implements were on exhibition.

We would state that our prospects for the future are flattering. At this fair we had good weather, and a very fine attendance during the last two days. The people look forward to the time of our fair as a grand "yearly meeting," where they can meet together, renew acquaintances, form new acquaintances, etc. During our late fair, notwithstanding the great political contest that was to come off in a few days, everybody seemed to enjoy themselves well, everything went off quietly, no drunkenness was seen upon the ground during the fair, and a very little outside the ground. This may be accounted for partly upon the ground that the masses of the people who attend our fairs are not inclined to get intoxicated; and another reason is, that we allow nothing inside to be sold or given away that will intoxicate—neither do we allow intoxicating liquors sold at any point nearer the grounds than prescribed by law.

HENRY COUNTY.

The third annual fair of the Henry County Agricultural Society was held on the fair grounds of said Society, on Wednesday, Thursday and Friday, September 16th, 17th and 18th. The grounds were in excellent condition, weather fine, but rather cool on the second day. The attendance on Thursday and Friday was large, but not as large as last season, owing to the State Fair being so near at hand at Toledo, and the people being so busy cutting up corn and sowing wheat. In point of numbers the fair was a success, but as regards the exhibition it was not as good as it ought to have been, and the people present declared it should be better next season. The show was good as to horses and cattle, and the floral, fancy needlework and household fabrics departments were excellent. No exhibition of field crops. Wheat, corn, oats and potato crops in Henry county were good. Sorghum is fast becoming a permanent institution in this county. The Society now numbers 140 members, and promises to increase in numbers and usefulness.

HOCKING COUNTY.

The sixteenth annual fair was held on the grounds of the Society, near Logan, Oct. 1st, 2d and 3d, 1868.

Owing to the backwardness of the fall, and the farmers, our fair may *almost* be considered a failure. The attendance was very small during the first two days, but on the third day the attendance was more encouraging. The stock exhibited, in some instances, was very fair; but the improvement in stock generally, throughout the county, is very meager. The exhibition of poultry, farm implements, and domestic manufactures about as usual. The fruit crop was very fairly represented, and the specimens were choice fruit. The potatoes (Irish and sweet) and pumpkins were considered very good.

The principal productions of this county are wheat, corn, oats, potatoes, tobacco and hay; sorgum is cultivated to some extent.

Wheat was fair, average about	10	bushels.
Corn very good, " "	40	"
Oats very good, " "	35	"

Tobacco fair, though a great deal was injured by the fall rains, during September.

Hay a fair crop, averaging about 1½ tons per acre. The specimens of grapes were very good, but as yet there is very little interest manifested in the grape culture.

There was no competition for crops at our fair.

Our fair ground is in very poor condition, and if we cannot make some improvement our Society will have "to go by the board." We are, however, endeavoring to secure a more desirable location for a fair ground, and dispose of the old one; if we can do so, we will no doubt instill new life into the minds of the agriculturists of our county.

Considering all the adverse circumstances under which we have managed to keep alive our Society, our fairs may be considered successes.

The number of members is 280.

I have endeavored to follow your instructions as closely as possible, and would have been better pleased could I have given you a better account of our fair and Society.

HURON COUNTY.

Our Society, this year, was fortunate in selecting the time of holding the fair for 1868, which was on the 16th, 17th and 18th of September. In proof of the old adage, "The early bird catches the worms," we not only had the best of weather throughout, but also a fair exhibition in all the departments, and a goodly number of people in attendance. Although not a success in every particular, yet our fair was so much better than anticipated and predicted by the croakers, that we try to be content.

The number of entries, though not much below the average, was not so great as our county ought to show at its annual fair. The cattle department was moderately well filled, some of the stock being of very superior quality, as shown by the premiums awarded at State Fair. The exhibition of horses and mules, particularly on fast trotting and pacing horses, was good and fully up to the usual mark. In sheep the display was very fair, showing that the spirit of permanent improvement in wool growing is on the increase amongst us, and that our wool growers still hold their own with their neighbors. The show in hogs was small, as usual, as was also that in the mechanical, fruit and vegetable departments, though in some respects better than last year.

Number of premiums awarded 244, amounting to $846.

Our principal crops, of wheat, corn, oats, hay and potatoes, for 1868, were rather better than for 1867. Our wheat, of fair quality, yielded an average of fifteen bushels to the acre, but the oat and corn crops were small. The indications were favorable for large yields in both the latter, but the drought and grasshoppers injured them fully one half, on the average. In many places the grasshoppers made clean work, destroying entire fields of oats and corn. Potatoes also suffered, and the yield was small. The hay crop was good, in quantity and quality.

The future prospects of the Society have not been as flattering as we could wish. The debt incurred a few years since in fitting up our present grounds, and which has hung like an incubus over us, instead of being diminished this year, was somewhat increased by the very means taken to reduce it, viz., holding a horse fair in June. Fears have also been entertained that we should be unable to retain our present eligible grounds after the expiration of the lease in 1872. We now find, however, that the lease can be renewed; and if the plans now on foot to cancel our indebtedness succeed, there is no reason why, with the proper effort, we should not soon place ourselves on an equal footing with our at present more prosperous neighbors.

JACKSON COUNTY.

Our annual fair was held on the first and second days of October, 1868. The exhibition was well attended, though not as largely as some others. This was not caused by any lack of interest on the part of the Board of Managers, but was the result of other causes, of which the greatest was the unprecedented wet weather throughout the entire month of September, causing such long delay in the sowing of the wheat crop with our farmers, that many of them could not think of taking time to attend the fair; and then the politicians were holding numerous meetings throughout the county, which many preferred to attend rather than the fair; but, on the whole, we had a good and profitable time.

Entries in the live stock departments were larger than usual, and stock of better quality, speaking well for the Society and farmers. The hall was well filled with the many useful and ornamental productions of the ladies of the county. The hall is always the centre of attraction, and adds much to the interest of our annual fairs.

Dr. J. T. Manahan delivered an interesting lecture on agriculture and the management of county fairs, which held his audience spell-bound for an hour with his well-developed ideas on the subject.

No statements of competitors for premiums on crops or other improvements in agriculture. The Society held four business meetings during the year, has a membership of one hundred and sixty-two, and has the almost entire confidence of the intelligent part of the farmers and producers of the county, and wields a mighty power for good.

Our principal crops are corn, wheat, hay, pasture, oats, potatoes, apples, peaches and sorghum. Corn the largest crop ever raised; yield about 35 bushels per acre. Wheat an average yield per acre; acreage smaller in former years. Hay a good yield, but sharply damaged by wet weather in harvest time. Oats good. Pasture very fine. Potatoes, average crop. Apples a failure. Peaches ditto. Sorghum good.

The most noticeable character of the past agricultural year was the unprecedented fall of rain in the months of August and September. In a few locations the grasshoppers were numerous enough to damage pasture fields.

KNOX COUNTY.

The Knox County Agricultural Society held its annual fair on the fair grounds at Mt. Vernon, on the 29th and 30th days of September and the 1st of October, 1868. The exhibition of stock was excellent. The show in Floral and Fine Arts Hall was not as good as could have been desired. This was owing to the dilapidated and leaky condition of the building—no guaranty could be given exhibiters that articles brought there would be protected from storms. This difficulty the Managers of the Society contemplate remedying before another fair is held, by building another hall.

The wheat crop was good both in yield and quality, but the amount sown was small. The corn crop was large and of a good quality. The oats and barley crops were almost a total failure. This was owing to the season being so wet that farmers were unable to get the crop in at the proper time. Clover seed was very light; the grasshoppers eat off the blossom, thereby preventing it from filling. The hay crop was very light, but was harvested in excellent condition. From the scarcity of the hay crop there will be a falling off in the amount of stock wintered in this county of one-fourth compared with last winter. Especially is this the case in regard to sheep, many of our farmers having disposed of their whole flocks to persons who slaughtered them for their pelts and tallow.

The fruit crop was unusually light, and of a very inferior quality.

LAKE COUNTY.

No competitors for field crops. We have 778 members. We have a good attendance at our fair. The prospects of its progress and usefulness are favorable. The largest crop raised in the county is potatoes; average yield per acre about one hundred and thirty bushels. The amount raised in the county we cannot ascertain at present, but is very large.

LICKING COUNTY.

The twenty-first annual fair of the Licking County Agricultural Society was held on the picturesque and ancient grounds of the Society near the city of Newark, on the 6th, 7th, 8th and 9th days of October, 1868. The weather during the fair, owing to the lateness of the season, was rather too cold for comfort, and to this cause, perhaps, may be attributed in a great measure the absence of many articles heretofore comprised in the list of entries for premiums.

The entries of horses were unusually good, though the number was not as great as at some of our former fairs; yet the superiority of the blood of the horses entered fully compensated for the lack of numbers.

The entries of cattle were rather limited in numbers except in the thoroughbred class, which was fully represented by the herds of three of our most distinguished cattle breeders, Messrs. Montgomery & Stark, George J. Haggerty and O. H. Wood. The herd of Montgomery & Stark contained the famous bull Duncan Airdrie, in whom is certainly developed the very perfection of the Shorthorn breed. In this same class, and of the same breed, was the bull Lord Rennick, though somewhat smaller in size, not inferior in purity of blood to his more successful rival, Duncan Airdrie. I refer with much pride to these two herds, as also that of O. H. Wood, as composing the finest three herds of thoroughbred cattle that it has ever been my fortune to witness; and it would be well for stock breeders in search of fine animals of this class not to overlook these herds of Messrs. Montgomery, Stark, Haggerty and Wood, who are almost exclusively engaged in the breeding of thoroughbred cattle.

The mechanical department was well filled with articles on exhibition competing for premiums. This hall contained all descriptions of agricultural implements, including reapers and mowers, farm implements and farm wagons, and contained many articles of usefulness and a fine display of mechanical skill. In this department a generous rivalry was exhibited by our stove dealers and foundrymen in the great variety of stoves entered for premiums, embracing those for heating, fancy parlor and cooking stoves. The first premium for cooking stoves was awarded to James E. Thomas, of this city. Although other stoves of a superior quality were on exhibition by Mr. Eddy and others, yet, under the rules of the Society, no premium could be awarded for any stove manufactured outside of Licking county. Under this ruling of our Board of Directors the gentlemanly exhibiters retired fully compensated with the warm commendations for the excellence of their stoves by the awarding committee, and the thanks of the Board for their generous endeavors to make our fair a success.

The horticultural department made a very creditable display of fruit, embracing many varieties of apples, peaches, pears, quinces and grapes. Quite a number of gentlemen in our county devote much attention to the cultivation of fruit, and among the most prominent I might mention Mr. Charles Wallace and Leonard Crow, of Licking township, Adam Linn, of Bowling Green township, and Kinsey Hull, of Franklin township. These gentlemen are annual exhibiters, and take much pride in advancing the horticultural interest of our county.

The cereal crops yielded more, and of a superior quality for the number of acres sown, than may be termed an average yield. Wheat and corn are considered our staple crops, to which our soil is peculiarly adapted, though rye, oats, barley, etc., thrive equally well, but are produced in more limited quantities. I might here add that potatoes are very extensively raised by our farmers. A very large crop was planted this year, but in some parts of our county entire fields were destroyed by the potato bug. This destructive insect made sad inroads upon the crop in many localities, even destroying the entire crop in several townships. This, I believe, was the only destructive insect with which this county was visited during the past season.

Our fair, financially, was a decided success, the receipts exceeding the expenditures for premiums, etc., more than $1,000, notwithstanding large amounts had been previously expended in preparing the horse ring for the fair, and we can now boast of one of the finest horse rings in the State.

Our Society has adopted a new constitution for the government of the Society. Under its provisions an entire new Board of officers and directors will be chosen on the second Saturday of January, 1869, and it is sincerely hoped that, under the auspices of the new Board, the interests of the farming and mechanical classes will continue to find the same fostering and encouraging care bestowed upon them by the retiring Board, headed by the energetic President, Wm. Veach, Esq., which is always so essential to the development of the resources of a country so inexhaustibly rich in everything conducive to the welfare and happiness of man.

LOGAN COUNTY.

The Logan County Agricultural Society held its Eighteenth Annual Fair on the 6th, 7th, 8th and 9th days of October, 1868. The weather was favorable, the attendance unusually large, and the receipts entirely satisfactory.

There is a growing interest in agricultural matters in this county, and each annual fair develops the increase of our wealth and a rapid advancement in every department. In no particular is this so apparent as the efforts of our farmers to restore the soil to its original fertility by improved culture, abandonment of successive crops, deep plowing, and while, at the same time, new, beautiful and substantial dwellings and farm buildings are being erected in every section.

There is a manifest improvement in horses and sheep, and while we can boast of but few thoroughbred cattle, by successive crossings we have valuable grades which find a ready sale in every market, and the number in each is greatly increasing. Some of our flocks of sheep are the finest in the State.

The crops of last year were abundant. Wheat is fully an average crop, so of oats and corn, though the latter was injured considerably in some localities by the early frosts. The potato crop was light, probably not more than half a crop. There was a large crop of fruit, and of excellent quality.

LORAIN COUNTY.

The Lorain County Agricultural Society was in debt at the beginning of the year 1868 to the amount of $2,792.96. This indebtedness, the report of the Treasurer shows to have been increased rather than diminished during the year. Some explanation of this increased indebtedness can very easily be given. In 1867 the Society entered upon their new fair grounds, upon the west side of Black River, in Elyria, after spending some four thousand dollars ($3,928.96) in fencing and fitting up. This is a work which cannot always be finished up at once. In 1868 the Board of Directors found it absolutely necessary to make additional expenditures, in alterations of the horse-track, and various improvements of the grounds. They also thought it advisable to incur additional expense in the erection of new buildings—putting up a substantial and permanent dining-hall, which will be an annual benefit, convenience, and, it is hoped, profit to the Society. These improvements, alteration of grounds, and erection of new buildings, cost, as per Treasurer's report, $1,017.48.

The annual Fair, held September 15, 16, 17 and 18, 1868, was successful, and profitable to the Society. There was some dissatisfaction with the new rule in regard to admissions, by which every one entering the fair grounds pays for tickets for every admission. The rule is the same in use at our State Fairs, and I believe is being generally adopted by the county societies. In fact it appears to be the only truly fair and honest rule by which all pay for what they receive, and there is no special reward for dishonesty. I think all candid minds must, on reflection, see it in this light, and be satisfied with it as an improvement.

The amount received for memberships and for entry fees was a little less than the year before; for admission fees, a little more. The whole amount of receipts of the Fair was nearly $400, or more than in 1867, when the receipts were larger than ever before. But the receipts of 1868 include the returns from the dining-hall and eating-stands, which being deducted, leaves the receipts of 1868 considerably less than those of 1867, the first year upon the new grounds, and much the greatest fair we have ever seen in Lorain county. The whole number of memberships for the current year is five hundred and fifty-two (552).

The show of stock and products at the annual fair was a very good one, although in some directions seriously injured by the prevailing drouths of the season.

In horses, cattle and long-wool sheep, the show was very good. Fine-wool sheep were lacking altogether. In farm implements the display was unprecedentedly large and fine; and also in fruits. Some departments in the halls were unusually well represented, and others very poorly indeed.

As for the prospects of the Society for progress and usefulness, there is certainly no cause for discouragement. It is, to be sure, pretty largely in debt—over three thousand dollars at the present time. But it has a property in its possession, valuable, and constantly increasing in value.

Under the fifth item of the report required by the rules of the State Board, I last year made out a very full statement, as far at least as my limited knowledge and observation would permit; and I believe I have nothing to add for this year.

MAHONING COUNTY.

The Board of Directors of the Society usually holds four business meetings each year, the principal business meeting being the one usually held in March, at which meeting the premium list is revised previous to publication. During the last year the Society built a new fence around nearly half of their grounds, and made other improvements. There are now 900 members of the Society. It is out of debt and has some surplus funds in the hands of the Treasurer, and the Society is in a flourishing and prosperous condition, and its usefulness is becoming more evident every year.

The principal crops of this county are wheat, rye, oats, corn, barley and hay. A large quantity of butter and cheese are also made in the county. Of cheese there was made during the past year about 89,000 pounds, and generally of good quality.

Wool is also largely produced, the clip last year being about 420,000 pounds. The next clip in this county will probably fall off from these figures about one-fourth, owing to a large decrease of sheep—thousands having been slaughtered last year for their pelts, as the sheep had become generally diseased with foot-rot.

During the past year there was raised in this county about 82,500 bushels of wheat, with an average of 13½ bushels per acre. Of rye there was raised about 9,700 bushels, being an average of about 9 bushels per acre. Of oats there was raised about 242,000 bushels, being an average of about 27 bushels per acre. Of corn there was produced 423,000 bushels, and the average yield was about 35 bushels per acre. Of barley there was raised about 3,500 bushels, being an average of about 17 bushels per acre. There was about 45,000 tons of hay produced, being about 1½ tons per acre.

During the previous season about one-half of the county suffered from dry weather during the latter part of the summer and during the fall. The potato crop was very much injured by the potato bug. They seemed to infest all parts of the county. They destroyed almost the entire crop.

The agricultural interests of the county seem to be in a good and healthy condition, and the interest in agriculture on the increase.

MARION COUNTY.

The eighteenth annual fair of the Marion County Agricultural Society was held at Marion, on the 14th, 15th, 16th and 17th days of October, 1868, at the new fair grounds, just fitted up in good order. The Society purchased 26 acres of land adjoining Marion on the north, built a good, substantial fence of pine boards around the whole, built 60 stalls entirely enclosed, for the use of fine horses and cattle, and a large number of other stalls not enclosed; erected a ticket office, Floral Hall, Mechanics' Hall, Dining Hall, Judges' Stand, and other smaller buildings, made a good, substantial track, one-half mile, and sunk the necessary wells, all of which cost the Society about $5,000; which grounds and improvements compare very favorably with any in the country, and at no very distant day you may make the arrangement and hold the State Fair on these grounds. For several years past the Society has been struggling between life and death, paying from 50 to 80 per centum of the premiums, the farming portion of the community being divided in opinion as to the propriety of holding fairs at all. The present year an interest was taken in the Society by the right men. An act of the Legislature was passed authorizing the commissioners of the county to assess a sufficient amount on the taxable property of the county to pay for the purchase and improvement of the grounds for the use of the Society; in pursuance of which the commissioners did assess one-half mill, which will be about one-half the amount required.

The fair for the year 1868 was a success, almost every class well represented. The display of stock was very good, the number of horses exceeding that of any former year. The Marion County Importing Company had on exhibition some ten or twelve very superior Norman horses, which, with other horses, imported from England and Canada, made a perfect success. B. Waddle, with his three fat steers (monsters they were), took the premium, as he did at the Ohio State Fair last year. The sheep on exhibition were very good.

The display of fruit was large and very excellent, We shipped from the county this fall about $15,000 worth of apples to Eastern and other markets, which speaks well for our county in that relation. Our fair was a little late for vegetables, yet there was an excellent display in that line, including "Father Green's" mammoth squashes, one of which weighed a trifle under two hundred pounds. A good show in poultry and swine. In fact, we had a good display in every class. Number of entries, 662. We are confident that our next fair will in every way far exceed the present one.

Our county is well adapted to grazing. We grow large quantities of corn, wheat and oats. Our wheat crop was good; corn fair; frost came on too soon, leaving us with much soft corn. Hay good, but crop light. Oats a fair yield.

Our receipts this year paid our entire premium list, leaving us a surplus, after paying all expenses connected with the fair, of about four hundred dollars.

MEDINA COUNTY.

No settlement has been had of the year's work, for the reason that our annual meeting was fixed for January 13, 1869. The term was fixed upon information that the

State Board would meet at a still later day in said month. At the last annual meeting the constitution was amended and one thousand copies printed. The membership fee was raised to $1.50. The Board fixed the gateage fee at $1.00 for team or carriage and two persons for one day only, and 20 cents for single admission by foot. This gave general satisfaction. No publication of the Treasurer's account has been made, but an abstract will be published immediately after the annual meeting.

In the purchase of the ground the Society became somewhat in debt, and have from year to year been able to redeem the same—a trifle this year more than formerly. The Board have purchased some additional land, and now own all the land inclosed. The Society have adopted a rule of forfeiture of all premiums not drawn by the 1st of January following the fair, which enables the Society to settle up every year—a thing very much needed. The Board hold a meeting after the fair and correct the awards of committees, by which the overreaching of men are overtaken, exposed and headed off.

The fair of 1868 was held October 5th, 6th and 7th, and no better time could well have been selected. The exhibition in all departments was fully up to former fairs, and that of cattle better. The whole number of entries was 773, an increase over last year of 117. The crops in the county were generally good, corn growing from 130 to 150 bushels of ears per acre. The best corn for fodder is believed to be sweet corn, the yield being equal to other kinds, while the nutritious matter is much greater.

There is a better and healthier spirit manifested among the farmers than for several years, and the fair is a growing institution, and is thereby a benefit to the county generally.

We have urged an appropriation of $500 by the commissioners of the county, in order to add necessary buildings, but so far cannot induce those guardians of the tax payers to grant our petition; and since our fair almost believe they have plainly discharged their duty in so disregarding our prayer.

Could we get our Agricultural Reports in season, it would prove beneficial to our interests; but as they come one year too late, they are more of a plague than anything else.

Every township and incorporated village has its Director. One-half of their number are elected each year. They hold their office for two years.

MEIGS COUNTY.

There were no competitors for the premiums allowed on crops. There was no premium offered for wheat, but simply on corn and oats. The mode of tilling the corn was with a double-shovel plow and hoe. The oats were sown in the usual way and harrowed in. The improved implements in agriculture are used but very little in this county, owing to the hilly and broken condition of the surface.

The Society of Meigs county have moved their fair grounds from Racine to Rock Spring, where they have purchased twenty acres of ground, at a cost of two thousand dollars, and inclosed the same, built a large shed for the display of articles, and made many other good and lasting improvements. These are the first grounds that have ever been owned by the Society. They have heretofore rented their grounds. The Society is in a very prosperous condition, far better than ever before. The number of members is about five hundred.

The principal crops raised in the county are corn, wheat, oats, potatoes, hay and buckwheat. The yield of corn is about thirty to forty bushels. Wheat, twelve bushels. Potatoes, thirty to forty. Buckwheat is generally very light, the average not known. Hay, about one tun per acre.

At a meeting of the Society on January 2d, 1869, it was resolved that the Society send a delegate to Columbus to attend the meeting of the State Board.

MERCER COUNTY.

The first annual fair of the Mercer County Agricultural Society was held on the 14th, 15th and 16th of Oct., 1868, after having changed the time to accommodate the neighboring counties, and to avoid having it upon the same day as theirs, the Society having leased of Judge Broadwell about fifteen acres of ground upon very favorable terms for ten years, situated in the beautiful grove adjoining the town of Celina, and between the same and the reservoir. Three sides of the ground have been inclosed with a good, substantial board fence. The east and south sides are open to the water, the shape of the same being in the form a of cape. The managers of the Society set themselves early to the preparation of the ground, but the unusual wet spring put the farmers back with their work, which, together with the wet weather in August and September, embarrassed the Society very much, but with the determined perseverene of the managers they succeeded in making a good half-mile track, building an exhibition hall, ticket office and thirty-six covered stalls, and had the ground in excellent condition; and it is thought by visitors from a distance that, with the additional improvements contemplated, our grounds will be one of the finest in the State.

The morning of the first day was rainy, and looked decidedly gloomy, and many croakers persisted in predicting a fizzle, saying Mercer county could not get up a Society; but the afternoon of the first, and the second and third days being fine, by ten o'clock of the second day their hall, thought to be ample for the first year, was filled to its utmost capacity. The display of fruit and vegetables was excellent; could not be excelled at the State Fair, in apples, pears and sweet potatoes particularly. The display of needle and ornamental work was fine, to say the least, as was also that of domestic products. Through the timidity of many of the farmers, the display of stock was not large, but good, each fearing to be excelled too far by some other part of the county. In machinery and mechanic arts, there was little or no competition, being off from the railroad. There were nearly 300 entries made by numbers, but fully 100 articles were exhibited that were not entered for want of time and room, and entry tickets were not procured. The fair proved a success beyond the expectation of all, and satisfied all of the usefulness of the Society—1st. In causing the farmers to look to the quality of their stock, farming utensils and mode of cultivation. 2d. It has shown there is much more good stock in the county than any one was aware of, it never having been exhibited, and when seen it was separately, and those that had very common stock thought it was the best, for they had not been seen side by side. I am satisfied that the advantages of the Society to the county are inestimable.

The principal crops of the county may, I think, be said to be, in their order, corn, wheat, oats, barley and flax seed. The season has not been a good one for the farmers, except hay, the late and exceedingly wet spring and the unprecedented fall of rain on the 15th and 16th of June, and the same being followed by a drouth of six weeks, with extreme heat, damaged the corn crop materially. It is hard from the above causes to estimate the yield. In corn, some parts of the county will yield fifty bushels to the acre; in other parts thirty, will average forty; wheat twelve, oats thirty-five, barley twelve, and flax seed seven bushels per acre. There has not, to my knowledge, any harm been done by insects, except the potato bug, which damaged the early crop in some places, and the apple tree borer, from which it is feared there is danger of injury to the younger growth of trees.

The number of members for the past year was 660. In conclusion I will state that it is my opinion that, with good officers and managers, and with the advantage of correcting the defects of last year, a great improvement can be made in the fair; and it is thought by many that the number of members will be doubled.

Much credit is due the officers and managers for their untiring energy in pushing the work to a successful issue against so many obstacles, perhaps more than they will ever get directly from the people of Mercer county. Much indifference was manifested by many of the best farmers of the county in not becoming members and attending the election of officers, perhaps in a lack of faith in the success of the Society. But it is hoped that at the January election the farmers and mechanics of the county will come up and elect their best—such, and only such, as are willing to perform their duty promptly without direct pay.

MIAMI COUNTY.

The Miami County Agricultural Society held its twenty-second annual fair on their grounds at Troy, on Sept. 30th, Oct. 1st, 2d and 3d, A. D. 1868. Being in the midst of the political excitement preceding the annual and Presidential elections, it was not as successful as was desired; but our people consider it their fair, and come up well to our support.

Our membership this year was six hundred, and we had eight hundred entries for articles on exhibition for premiums.

Our Society for two years has held spring meetings, and fairs for the benefit of stock breeders, and the manufacturers of agricultural machinery interests, when we introduce the implements to our farmers, to better advantage to both, we think, than at our annual fall fairs. Our Society also adopted the idea at our first spring fair of giving each member a certificate of membership, taking him into our grounds at all times during our annual fair as a member of our Society, for one dollar, and giving him likewise four day tickets, for the benefit of others in whom he is interested, one of each four to be taken up each day at the gate, for that day's entrance, of every person having them.

We think this arrangement is better and less trouble than our former mode of family tickets at one dollar each, admitting every person claimed as belonging to the family.

MONTGOMERY COUNTY.

Our horse fair, held on the 8th, 9th and 10th of June, 1868, was a decided success. The exhibition of horses I think was fully as fine as any I have ever seen in this county, excepting those exhibited at the State Fairs held at this place in the years of 1866 and 1867. There were 120 entries, and about 140 of the finest horses in the States of Ohio and Indiana on exhibtion. The attendance of spectators on the first day was not as large as we had reasons to expect, but the second day made amends, and the Board throughout were very well satisfied. The third day compared favorably with the second. Taking all in all, we congratulate ourselves on our spring or horse fair being a success.

The 15th annual fair of the Montgomery County Agricultural Society was held on the grounds of the Society near this city, on the 7th, 8th and 9th of October, 1868. The weather being very cold and disagreeable for the season of the year, the fair was a failure, not paying expenses. The whole number of entries were 455; number of members, 451.

MORGAN COUNTY.

The annual fair of this Society was held on the 29th and 30th of September, and 1st of October, 1868, at the grounds of the Society, near McConnellsville, but was not as well attended as in former years, by reason of a week's continuous rains prior to the time of holding the fair, and the farming community generally, being behind with their work, availed themselves of the good weather during the fair to attend to the same, and the Board did not deem it advisable to postpone the time of holding the fair to a later date. Had the weather been favorable before the fair, so that our farmers had not been pressed with their work, it is believed that the attendance would have been as large if not exceeding former years, and the display of stock, and all articles generally, correspondingly as great.

The display of sheep was very much below that of the previous year, but such as were on exhibition were as good as in former years. The interest in and attention to this class of stock has very materially decreased in this county during the past year, occasioned by an overstocked market and the depreciated price of wool. The exhibition of horses was good and fully up to the average. This class of stock continues to be a prominent feature of our fair. The Board the past year modified the premiums on sweepstakes, confining them exclusively to the county, which, it is believed, will greatly increase the interest in that class. The display of cattle was quite as good as formerly, and those on exhibition were of average quality. The display of hogs was fair.

In the mechanical department the display was very fine. Farm products and vegetables were good. The exhibition of fruit was splendid, and considerable rivalry manifested. In domestic manufactures the display was excellent, and, probably, superior to previous fairs—fancy articles surpassing last year's exhibition to a great extent. In paintings, of all kinds, the talent and display are on the increase.

Financially, the fair was a success, or about made expenses; but subsequent improvements of the grounds have thrown the Society in debt about three hundred dollars.

The number of members of the Society for the past year was 431.

At the annual election for directors of the Society for the year 1869, held at the fair grounds on the last day of the fair, the following were chosen: President, A. S. Dickey; Vice-President, James A. McConnell; Managers, James C. Loughridge, James J. Huffman, David L. Jenkins, Jackson B. Goudy, Benjamin F. Matson, Joseph Reed, Benjamin G. Converse, and Samuel H. Scott. The new Board has not had a meeting since their election, and, consequently, have not yet elected a treasurer and secretary.

The Society is in a good, flourishing condition, with fair prospects for future usefulness. It has good grounds, eligibly located, well watered, good buildings, but not large enough for the purposes of the Society.

The past season was generally good for agricultural purposes, and but for the very dry weather in August and first part of September, would have been as good as desired, which, followed by the rains in the latter part of September (heretofore mentioned), affected the crops of this county somewhat.

Grasshoppers prevailed to a considerable extent in certain localities, destroying meadows and pasture, potato tops, and the green tops of other vegetables. They passed over considerable portions of this county in great numbers.

The principal crops raised in this county are hay, corn, wheat, oats and potatoes. I herewith give a statement of all raised, with the average yield per acre:

	Amount Raised.		Av. per Acre.
Wheat	109,470	bush.	10 1-14
Rye	7,004	"	8¼
Buckwheat	4,805	"	8½
Oats	121,607	"	21⅓
Barley	1,507	"	13¼
Corn	547,163	"	32¾
Meadow	20,120	tons	1½
Clover	1,449	"	1 1-5

	Amount Raised.	Av. per Acre.
Flax	1,530 lbs. fiber	150
Potatoes—Irish	35,432 bush.	69 1-5
Tobacco	306,329 lbs.	697¼
Sweet Potatoes	1,908 bush.	——
Sorghum	37,391 gals.	106 5-6
Maple Sugar	710 lbs., and 242 gals. syrup.	
Apples	157,681 bush.	3,812 acres in orchards.
Peaches	17,133 "	
Pears	937 "	

MORROW COUNTY.

We have no statement on farm crops to report this year.

The proceedings of the Society are probably the same as most similar associations.

The number of members is 207.

The prospects of the Society are at present good, and bids fair to be more beneficial in the future than it has the past. We have been purchasing new grounds and improving the same which have cost a large amount of money and labor, but the Society is now nearly out of debt; I think another year, if successful, will release it entirely.

The principal crops raised are wheat, corn and oats; the average per acre, as near as we can estimate, is as follows: Wheat 15, corn 45, and oats 35 bushels per acre. Owing to the destruction of crops by the grasshopper and potato bug, the average is far less than it would otherwise have been.

The principal source of revenue in our county is from wool.

The characteristics of the weather for the past season are, extremely hot and dry.

MUSKINGUM COUNTY.

There is still progress in the great cause of agriculture in this county, although the improvement is less than could be desired. A more careful selection of seeds and of implements, and a more thorough preparation and cultivation of the soil, are evident to any who are accustomed to observe the operations of our agriculturists. Gardening and the raising of small fruits are also receiving increased attention and care. We may safely say both of the field and garden, improvement is manifest.

Stock has and still receives considerable attention. Very fine specimens of horses, cattle, sheep and hogs were on exhibition at our last fair, and received the commendations of committees and visitors.

The average crop of wheat for the past year will not exceed 12 bushels per acre, and of corn not more than 40. The wet weather in early spring, and the severe drouth which succeeded, severely injured not only the wheat and corn, but so affected the potato, that not more than one-fourth of the usual crop was realized, and the quality was much inferior to that in ordinary seasons.

The fruit crop was one of ordinary productiveness, although it did not fulfill the expectations entertained in early spring. The ravages of the insect tribes were, perhaps, never more apparent, and it is fast becoming a matter of serious concern as to what steps can be taken to prevent their depredations. The attention of the State Board and of all growers of fruit should, we think, be turned to the best and most available means of protecting the fruit from the injury resulting from the insect tribes.

Our fair was held in September, and although in the number and variety of the articles, products, and stock upon exhibition there was a manifest improvement upon that of last year, yet the fair was, pecuniarily, a failure. It is much to be regretted that such was the case, yet it is not easy to perceive how, unless a great deal more interest in agricultural affairs is taken by the community, *any* fair can be sustained which has for its object the advancement of agriculture and manufactures, and the elevation of the tiller of the soil and the artisan of the workshop.

As has been stated in former reports, the membership annually varies. For the past year the number of members is about 300.

NOBLE COUNTY.

The sixteenth annual fair of Noble county was held upon the Society's grounds, at Sarahsville. This season has been a singular one, the spring very wet, and from the first week in June to the second week in August, we had no rain in some sections of the county; the rain went in streaks, sometimes not over one or two miles wide.

The wheat crop about half a crop; oats nearly a failure. Grasshoppers injured the oats some, and also the pasture. Corn on high lands not so good on account of drouth, though we have an average crop of corn in the county. Grass crop light. Tobacco crop light in the greater portion of the county. Apples scarce; most of orchards failed. Peaches very scarce; plums scarce; also, cherries scarce.

The exhibition of stock, except horses, was not so good as last year, on account of the drouth. Stock looked bad, but generally of an improved character, especially horses, horned cattle, hogs and sheep, all of which, in appearance, go to say that the farmers of Noble county are fully alive to the improvement of their stock and farms. We can say that there have been more hogs shipped to eastern markets this year than any previous one.

The potato crop is good, though they made from the second week in August. There were some persons who examined their potatoes just before the wet season set in, and found no signs of potatoes on the vines, and when dug in the fall, they say they never dug a better crop. The potatoes were tender as new ones in the spring; the skin was new and tender, though the potato, when cooked, was dry and mealy.

The Society now numbers 177 members, which shows a falling off. This is accounted for in this way: the season being dry, and farmers not having much to bring to the fair, caused a falling off of our members; but it is expected, by its friends, to increase in number and usefulness. The attendance by the public generally was more than was expected, taking the drouth into consideration.

OTTAWA COUNTY.

The thirteenth annual fair of the Ottawa County Agricultural Society was held at Oak Harbor, on the 7th, 8th and 9th days of October, 1868. The cause of agriculture in our county had materially suffered during the war, and the fairs were discontinued for two years.

The first eleven fairs were held at Port Clinton; the Sandusky Peninsula and the islands of the Lake being, at the early settlement of the county, the principal agricultural regions. With the return of peace a new interest in agriculture also returned, and, upon the re-organization of the Society, it was found that, since its organization, the settlement and agricultural improvements of the western townships had increased to such an extent, as to leave Port Clinton no longer a central location for the holding of fairs in the county; whereupon, by resolution of the managers, the fair was removed to Oak Harbor.

The citizens of that place procured the lease of 10 acres of land, fenced the same, and prepared a track, at an expense of about $500, and double the same to the Society, which erected buildings, &c. The grounds are a handsome grove, well supplied with water, and the second fair was held on the grounds this year (1868).

The weather was rather unfavorable, but, notwithstanding, a good display of articles was furnished, by numerous exhibiters, and a good attendance of visitors made it a perfect success. The display in the pomological department was very fine, and promises fair for the future of our county. Domestic animals were well represented. Some very fine specimens of the cereals were on exhibition. Potatoes, cabbage, and other vegetables, were also in good numbers and size; and our mechanics, by products of their handicraft, contributed much to the interest of the fair. By a little more united energy and perseverance we hope to make our future fairs equal to any in the State.

There are, perhaps, few counties in the State whose natural resources, in diversity of soil and climate, give such a wide source to agriculture and the mechanical arts.

The islands of the Lake which are within the boundaries of this county, and the long range of coast of the Sandusky Peninsula and Lake shore, give us an extent of nearly one hundred miles of fishing coast, unequaled by any other county in the State in extent or productiveness.

The limestone quarries and plaster beds are almost inexhaustible.

The products of our vineyards are not excelled by any other county in the State; the products of the forest, in timber and furs, is a source of great revenue to our people. The soil is well adapted to the cultivation of all kinds of grain and farm produce. The past year has been, generally, a year of plenty for all kinds of farm products, with the exception of grapes, which, owing to the wet weather in the early part of the season, were a partial failure.

There is a large portion of our county in a state of nature, but the increased interest in agriculture and a steady stream of immigration are fast settling and improving our fertile lands.

PORTAGE COUNTY.

The twenty-third annual fair of the Portage County Agricultural Society was held on the 15th, 16th and 17th days of September, 1868, at their fair grounds, one-half mile east of the court-house, in Ravenna. The fair was a success; the number of people not so large as in some former years, but very general satisfaction was given, as everything passed off pleasantly.

The Society have been laboring for years with a large debt on hand, which was unnecessary and made much trouble, but by great economy was gradually reduced each year, until the debts have all been paid, so the Society is now in good condition. The Board have, the past fall, secured a new lease of fair grounds for a term of ten years, on very favorable terms, so there is no reason why the Society may not hereafter be very successful.

The exhibition of stock was good; that of horses, hogs and poultry was very good. Sheep a small show, but very good specimens Cattle show very small, as farmers were afraid of exposing their cattle to the Texas cattle disease. The show of agricultural implements was much superior to any former year. Floral and Vegetable Halls were well filled, and made a nice show. Fruits was a very nice show. Apples in this county was a large crop, and large quantities shipped. The drouth the past summer has been very severe on farmers. All crops except wheat are very light. Wheat was a very good crop.

The potato bug was very destructive in many places. Also the grasshoppers were very numerous, and did much damage. In some portions of this county the white grub has done much damage to meadows and pastures. Much of the meadows and pastures will have to be plowed before much grass will grow on them.

No entries made for premiums on crops. Wheat crop fine quality, average about 17 bushels per acre. Oats light crop, average 22 bushels per acre. Corn medium crop, average about 45 bushels ears per acre. Potatoes good quality, and average about 100 bushels per acre on sandy soil; on clay soil a total failure.

Butter and cheese perhaps less made than in any former year, mostly on account of the drouth, grasshoppers and white grub. The hay crop was very light, and much higher than in former years.

Hogs a short crop in this county. Sheep have been reduced as much as possible. I think there will be 25,000 less in the spring of 1869 than in the spring of 1868.

PREBLE COUNTY.

The managers of the Preble County agricultural Society are sorry to be unable to make a good report. We fixed on the 22d, 23d, 24th and 25th days of September on which to hold our annual fair. A cold rain storm commenced with our commencement, and continued for three days, reducing our receipts to one-third of what they should have been had we had pleasant weather. But, not standing on the order of their going, exhibiters were on the ground in more than usual numbers, and there was a show of zeal and persistence worthy of success. The managers are encouraged to renew the effort by the liberality of the people.

Wheat was unusually poor, not more than a half crop; quality poor. Corn gave a good yield in quantity; quality light. Oats light; quality light. Potatoes good yield and good; clear from rot.

PUTNAM COUNTY.

No regular statements of any crop. The Society have sold their old grounds and purchased new, which to some extent embarrasses the Society. The reason for this change was caused by our old grounds being subject to overflow of water, causing great damage to the grounds. We think the Society will be more prosperous by this change. We number but 132 members. This is not over one-third the number that we ought to report, provided proper interest were taken in the same.

The principal crops raised in this county are wheat, oats, corn and buckwheat. Wheat an average crop. Corn two thirds of a crop; wet in spring, dry in latter part of season, frost nipping the late corn badly in some localities; high water injured the same. Oats good. Potatoes about one half crop; injured by the drouth and potato bug. Hay good; quality but an average. Clover seed almost an entire failure.

RICHLAND COUNTY.

The nineteenth annual fair of the Richland County Agricultural Society was held on the Society's grounds, at Mansfield, on the 5th, 6th and 7th days of October, A. D. 1868.

The number of members of the Society, for the year 1868, is 159—being 20 less than for the previous year.

The grounds on which the exhibitions of the Society have been held were entirely too small and in every way unsuited for the purpose. A new ground, containing 24 1-10 acres, has recently been purchased by the Society, and efforts are now being made to sell the old ground.

When the difficulties attending this movement (opposed as it is by fogyism) have been overcome, this Society will speedily attain the standing worthy of one of the richest agricultural counties in the State.

SANDUSKY COUNTY.

Our fair was held on the 17th, 18th and 19th days of September, the week preceding the State Fair at Toledo, which prevented a large attendance, but the interest of those present exceeded that of all former exhibitions.

The exhibition of stock was hardly so large as last year, but was up to any previous year in quality. Horses were well represented. Some very fine specimens of elk were on exhibition, and elicited much admiration and attention. The fruit department was not as well represented as last year, owing to the unfavorable season. The display of grain and vegetables was good, and Mechanics' Hall was filled with articles which were highly creditable to the exhibition. The display of agricultural machinery was large and varied. The ladies' department was full, showing a large increase in domestic substantials, such as cloths, linens, carpets, stockings, socks, gloves, yarns, &c., together with quilts, both ornamental and substantial, blankets, and hundreds of other useful and substantial articles of industry; besides an abundance of the useful and ornamental, which aid so much in beautifying and embellishing Floral Hall, that being the great point of attraction for all visitors—showing that woman's ingenuity and industry are always foremost in promoting the enterprises of the day.

SENECA COUNTY.

The fair of the Society was held on the new fair grounds, at Tiffin, O., on September 29th, and 30th, and October 1st and 2d, A. D. 1868.

SHELBY COUNTY.

The last annual fair was held on the grounds belonging to the Institute on the 1st, 2d and 3d days of September, 1868. The attendance and display were not as large as they would have been, it is presumed, if the fair had been held two weeks later.

There was no competition on crops, or improvements in agriculture.

The Institute held six meetings, during the year, for the transaction of the necessary business of the association. The number of members is 225. The prospects of the Institute are encouraging.

The pricipal crops raised in the county are wheat, corn, oats, potatoes and hay. The average of wheat was about 10 bushels to the acre, and was of like quality as in 1867. Corn averaged about 25 bushels to the acre, and was not as good as last year. Oats averaged about 30 bushels to the acre; the crop was better than has been raised in the county for a number of years. The crop of potatoes was a poor one; drouth and bugs injured early in the season. All the potatoes were made after the bugs left the vines.

The hay would not average more than one and a half tons to the acre; the crop was a fair one, and was well cured.

The season was favorable, excepting the drouth and early frost, which affected some parts of the county more than others. The grasshoppers did great damage in different sections of the county.

Agriculture has improved to a very flattering extent in the county, and is making steady and permanent advancement.

SUMMIT COUNTY.

Our nineteenth annual fair was held, in Akron, on September 29th and 30th, and October 1st and 2d, and although the weather was not what could have been wished, yet there was a large gathering of people, and a fine exhibition of every thing that goes toward making a good county fair.

The prospects of the Society are very flattering indeed. The number of members is 810.

THE FAIR.—On Tuesday and Wednesday, the two entry and "get ready" days, everything betokened one of the most successful fairs ever before held in Summit county, there being a larger number of entries made in almost every department, and a better general preparation made for display than at any former fair for many years. The attendance on Wednesday was very fair indeed for the second day; but Thursday, which should have been, and was, in fact, the great day of the fair, opened up stormy and disagreeable in the extreme, and though it partially cleared away about nine o'clock, the weather continued lowery and threatening throughout the entire day, keeping thousands away who otherwise would have been present. As it was, however, there was, in reality, a large crowd of people in attendance, and the pecuniary results were very satisfactory to the officers, indeed.

It will be utterly impossible for us to give anything like a detailed statement of the articles on exhibition, almost every department being full. Floral Hall was very tastefully fitted up indeed, being adorned with evergreens, flowers, pictures, etc., and hung with appropriate mottoes. The main hall was well filled with field and garden vegetables, grain, dairy products and fruits, such as apples, pears, peaches and grapes, canned and preserved fruits, syrups, wines, etc., domestic manufactures and cookery; millinery and fancy needle work; mechanical products and merchandise; sewing and knitting machines, all in full operation; the wings being filled upon the one side by a large variety of potted plants and flowers from the Cemetery Green House, under the charge of Mrs. Evans and Superintendent Wills, and the other with choice paintings from the studio of Mr. H. W. Boss, and musical instruments from the rooms of Messrs. Scott and Straub, of this city.

Upon the outside of the hall, in addition to the unusually fine display of agricultural machinery from the Buckeye and Excelsior Works, there was a very large show of plows, both from the old works of A. Chapin & Son, and the new works of Mr. A. Rice, besides an almost innumerable number of washing machines, fodder cutters, hay lifters, spring bed bottoms, self-acting gates, etc., etc., while both the Akron Stove Company, Wetmore, Baldwin & Paige, and the new Stove Works of Messrs. Taplan, Rice & Co., were fully represented by some of their choicest wares and latest inventions.

In the stock line there never was so fine a display upon the grounds, both in horses, cattle, sheep and swine. We cannot particularize, but refer the reader to the premium awards, which were published, for the details in regard thereto, as well as in reference to the triumphs of the ring under the liberal purses offered by the Society.

On Friday the morning again opened cloudy and drizzly, lasting a good share of the forenoon; notwithstanding which there was nearly as large an attendance as upon the day previous. The ordinary business of the fair was proceeded with, according to programme, until one o'clock P. M., when, pursuant to notice, after a few explanatory remarks by President Alexander, Ex-Gov. Tod was introduced to the audience, and spoke for an hour and a half.

The balance of the afternoon was devoted to the trial of speed and the sports of the ring, and the fair closed without a single accident or disturbance of any kind, and with the general remark that, notwithstanding the unfavorable weather, it had been one of the pleasantest and most satisfactory fairs ever held in this county.

REPORT OF THE COMMITTEE ON FARMS.

J. Park Alexander, Prest. Summit Co. Ag. Society:

In presenting our report upon the farms entered for premiums, we wish to remind you, and the Society which you represent, of the instructions under which we were required to make our decision and report. To quote the language of these instructions, "They did not intend the above as prizes on the best farm actually to be found at the present time in our county, but the best farm, all things considered, taking into account the natural condition of the soil; or, from another view, it is a prize offered to the person having accomplished the most in the way of improving his farm from the condition in which nature gave it to him. It is expected the committee will write out an extended report, fully and freely commending merit, and as fully and freely criticising and pointing out the demerits of each and all the farms examined."

The points to which our attention was especially called were, "1st, The natural fertility of the soil. 2d Present condition of the soil. 3d, Manner of cultivation. 4th, Present condition of crops. 5th, The condition of fixtures, such as buildings and fences. 6th, The condition and kind of farm implements. 7th, the number of acres in cultivation, in pasturage, in meadow, in woodland. 8th, The approximate cost of farm buildings. 9th, Accessibility, in arrangement of fields, woodland and water. 10th, The amount of cash sales from crops raised in 1867. Also, the amount of stock grazed or wintered, or either, and the cash value thereof."

The difficulty of so estimating and combining all these elements, in our general judgment of the farms presented, as to do injustice to neither of them in any particular, must be obvious to every one. It will not surprise us if good judges dissent from our opinion.

The farms examined were three, viz.: That of Joseph Babb, of Portage, the farm of James Hammond, of Copley, and that of Geo. Kirk, of Bath. In respect to the excellent and well-managed farm of Mr. Babb, it is due to him to state, at the outset, that, for reasons which will be given in another place, there were deficiencies in his farm which excluded it from fair competition with the others.

"All things considered," therefore, we award the first premium to Jas. Hammond, of Copley, and the second to Geo. Kirk, of Bath. Upon all these farms the committee regret a too common want of farm management generally, viz.: a full and accurate account of the several products of the farm, showing their actual cost and market value. The son of Mr. Hammond had very commendably undertaken such an account, and with all of the most important crops had charged and credited to each the expenditures upon them and the avails received. From these exact figures, in black and white, it may be interesting and profitable to the farmers of Summit county to note some extracts. Probably a majority of the farmers of the county would be wholly unable to say, except as mere guesses, what crops upon their farms had been for a series of years remunerative, and what ones not so.

From these accounts of Mr. Hammond's, it appears that in 1867, from 23 acres of wheat, he raised 534 bushels, somewhat over 23 bushels to the acre. The whole expense of the crop was $165. It was sold for $1,201.50. From 14 acres of barley he had 275 bushels, at a cost of $1.00 for seed and cultivation, &c. The same was sold at $1.00 per bushel, leaving nearly $200 profit from the 14 acres. From 8 acres of oats he had 240 bushels, costing $48.20. The market value of the same, though none were sold, all being fed upon the farm, was $144. Upon 28 acres of corn, he had 2,020 bushels of ears, costing about $200, and worth $1,212. From 40 acres of timothy and clover, he had 75 tons of hay. He kept 14 cows, 15 steers, 8 horses and colts, 13 hogs and 170 sheep. The sales of chickens and eggs were about $75. He had about 300 loads of manure, and also used about one-half ton of plaster. His sales from cattle and wood were $1,610. The whole income of his farm of 245 acres, as nearly as could be estimated, was about $4,000.

Upon the farm of Mr. Babb, of 271 acres, there are 11 acres of fruit trees, peaches, cherries and apples of the best varieties, and generally in good condition, 38 acres of oats, 15 acres of wheat, 30 acres of clover, 20 acres of barley, 20 acres of corn and 29 acres of grass. Ten horses and colts were kept, 23 cows, about 15 young cattle, 60 sheep and 5 hogs. He sold, last year, about $1,100 worth of cattle; of chickens and eggs about $150. The whole income of the farm for 1864 was about $4,000.

Upon Mr. Kirk's farm of 167 acres, were 4 acres of wheat, producing, as was supposed, about 80 bushels; 7 acres of oats, 300 bushels; 4 acres of rye; 10 acres of corn, 600 bushels ears; 25 acres of grass, 45 tons; 1½ acres of potatoes; 8 cows, 6 young cattle, 2 horses, 3 colts, 58 sheep and 9 hogs. The avails of the farm in the whole, or of particular crops, could not very well be obtained, as no accounts had been kept. The farm is much smaller and less productive in the aggregate than either of the others, but taking into account the naturally harder soil to be subdued than either of the other farms, the fences and buildings and farm implements which had been put upon the farm, and the present condition of them, and of the crops, as indicating the energy and skill and success of his management, the second premium was awarded to him.

Owing to plans unsettled till quite lately, in regard to the running of a road through Mr. Babb's farm, he had neglected attention to his fences, and the best shaping of his fields. His fences were not generally so good as those upon the other farms, and were in places disfigured by clumps of brambles and weeds. He is now at work upon the foundation of a house, which, judging what we could see and understand of his plans, is to be one of the very best farm houses of the county, abundantly supplied with the purest spring water, issuing from under the foundation of his house, and capable of being carried to every part of it. His buildings, however, now upon the farm, with the exception of one good barn, are poor, and on account of his building arrangements, at present in a very dilapidated condition. His farm implements, though of approved kinds, and in good variety, were in bad condition, from want of proper protection from the weather. Upon the other two farms the machinery, as well as the buildings, were all good, and well cared for. For these reasons, as suggested above, the farm of Mr. Babb, though very productive and in a high state of cultivation, was not in proper order to enter fairly into competition with the other two for prizes upon the terms proposed.

Mr. Hammond's farm was not only well fenced, but also furnished throughout with well made gates, mostly hung between stone posts, and all so arranged as to give easy access to each and every part of the farm. The other farms were deficient in their arrangements, and in the conveniences of gates; upon Mr. Babb's not even bars with a single exception were seen by the committee. Mr. Hammond seemed to the committee to be more systematic in his farming than the other, and to carry out more thoroughly a system of rotation of crops. Upon the other farms the crops in rotation were generally the same, but the rotation not so rigidly adhered to. The crops in rotation were generally clover, corn, oats or barley, wheat, the manure to be put in with the wheat.

The arrangements upon the farm of Mr. Hammond for saving and composting manure were very good; in the other two very bad, most of the very best part of the manure being washed away by the rains. This was especially the case in the yard of Mr. Babb. All these farms showed clearly enough the value of clover as a means of keeping up the fertility of the land. The best piece of corn, which was upon Mr. Hammond's farm, was upon clover sod, with no manure except a little plaster and ashes in each hill; only one crop of clover having been cut, the second growth plowed under. The crops upon Mr. Hammond's farm were remarkably even throughout, and free from weeds and wild grasses. Particular crops upon the other farms were better than often found. Mr. Babb's oats and Mr. Kirk's oats were superior. The farms are all well watered, all suitably proportioned in regard to tillage, pasturage and woodland, Mr. Babb's timber being much more abundant and fine. The farms of Messrs. Hammond and Kirk are well furnished with shops, tools and benches for mechanical repair, and as a school of ingenuity for the boys.

The gardens, though good as the most, and better than many of farmers' gardens, were not in keeping with the farms. Farmers, in the absorbing regard for the large fields, seem to despise the little patch called a garden, and, as a consequence, the family are deprived during the year of many of the luscious fruits and vegetables and other healthful influences, both for mind and heart, which are to be found in the well kept but circumscribed gardens of their neighbors of the town. There is a large scope for improvement in this respect among the farmers of our county generally. The farm must be made productive and profitable as a farm. Nor while the farmer is struggling with debt can he spare much for adornment and luxury. But when that struggle is past, and in a measure from the beginning, nowhere should the productiveness and profit of a farm show itself more clearly than in the comfort and elegance of the home of the farmer, in the well-kept house and surroundings thereof, and in the intelligence and high moral culture of the household.

The committee had very *satisfying* evidence of good housekeeping, and of skill in the culinary art, in these households, and have abundant reasons to believe that the remarkable success of all these farmers, for they have all made farming profitable, has been in no slight measure due to the helpful co-operation of their wives and children.

H. W. HOSFORD, Hudson.
A. HALE, Bath,
AVERY SPICER, Portage.

TUSCARAWAS COUNTY.

This county held its annual fair on the Society's grounds near Canal Dover, September 30th and October 1st and 2d. The weather was fine and the attendance large.

The whole number of entries was 788. The entire membership is 812. The total receipts were $2,189.90. The Society is out of debt, and has a small balance on hand with which to commence making improvements in our fair grounds.

The entries were respectable in nearly every class, horses—138 entries—taking the lead. There were only 6 entries of swine, and 9 of poultry. Of sheep there was a fine display, the long-wooled coming in for a share. The show of cattle was creditable. In the vegetable department there was a very fine display, in spite of the grasshoppers and potato bug. The entries were 88. The exhibition of fruit was decidedly good—the entries 67—but not quite so attractive as last year. The season was not so favorable to the production of fine specimens of fruit, but it was emphatically favorable to the production of insects—our orchards produced enough for home consumption and a small quantity for export.

Fast horses are considered by "fast" members to be indispensable to the success of our fair, and it is but just to add they still constitute an attractive feature; but whether that attraction is conducive to a real improvement in our character as farmers, is here a mooted question. The horse interest is demonstrative, restless, exacting, tenacious, opinionated. It is not so in regard to other farm animals.

No entries in field crops. The exhibition in the mechanical department, though good, was hardly up to last year in variety and excellence. In farm implements the entries were 28. We shall never feel that the work of improvement is progressing aright until the mechanics and manufacturers manifest as deep an interest in exhibiting the products of their labor as the farmers do of theirs.

Of field crops it may be said, corn was considerably below a fair average. Hay only a medium crop, but saved in excellent condition. Wheat a heavy crop. Oats short—the dry, hot weather and the grasshoppers affecting the crop seriously. Buckwheat quite light. Potatoes nearly destroyed by the potato bug, though the September rains made a small crop—not well ripened—very little appearance of rot. Barley good. The crop of clover seed nearly a total failure. Sorghum diminishing in culture, but the high price of sweets promises to demand for it more attention hereafter—and it deserves it.

We have not yet a well-organized farmers' club in each school district in the county, though we know we ought to have, in order to keep us awake; but here, as in many other sections of fertile Ohio, we get really awake only once a year—during the time of our fairs. We need the weekly meetings of these clubs, especially in the winter season, to keep us awake to the importance of improvement in cultivating our field crops, as also of the best manner of improving our farm stock. Ought not the State Board to require each county society to maintain a farmers' club three months each year?

Our many successful efforts have settled the matter that we can get up a good fair—a very respectable show of the products of the farm, the garden and the mechanic's shop—for we never have a failure, and when the weather is favorable we invariably make it a financial success. Of course we call in the assistance of the "decorative sex," for it is here conceded these have rights at our fairs, which we are bound to respect, whether they have rights at the ballot-box or not.

An attempt was made at procuring the amount of exports of the leading products of the county—wheat, corn, oats, wool, fruit, pork, live stock, butter, eggs, iron, salt and coal; but detailed statements from our railroad men and produce and stock dealers could not be obtained in time for this report. We hope for better success in this important matter hereafter There is, however, one article of export, new to this locality, which may be mentioned, to-wit, sheep pelts, 32,000 of which were exported this year. Comment on this point is needless.

UNION COUNTY.

The premium on best acre of corn was awarded to Charles McMullen; on which acre of ground he raised one hundred and four bushels of corn. No other competitors.

The Society during the past year has been doing a good work in the way of improvements. They have put up a new Floral Hall and a large number of stalls, which, together with the elarged grounds and trotting ring, have added greatly to the interest of the community in its success and advancement. There are at present five hundred and eighteen members, and the future prospects for usefulness and progress are highly gratifying. The success of the Society during the past year has been unprecedented, exceeding the expectations of all its friends and patrons. It has been such as to almost clear itself of debt, which it is hoped it may be able to do in another year, with a surplus.

The principal crops raised in the county are wheat, oats, rye, corn, sorghum, flax, barley and potatoes.

	Amount raised.	Average per acre.
Wheat	about 92,162 bushels	about 10 bushels.
Oats	" 168,252 "	" 28 "
Rye	" 5,000 "	" 10 "
Corn	" 1,229,203 "	" 35 "
Sorghum	" 12,000 gallons	" 200 gallons.
Flax	" 3,674 bushels	" 5 bushels.
Barley	" 2,900 "	" 10 "
Potatoes	" 16,000 "	" 40 "

The past season has been very favorable for vegetable growth; during summer months neither too wet nor too dry, and an abundant supply of rain to promote rapid growth. The heat in July was almost intolerable; without any serious results, however; very favorable for rapid growth of corn. Insects gave us very little trouble this season. Locusts did very little harm. Grasshoppers eat corn in some sections—not, however, to its particular damage

The county is being extensively drained by the use of drain tile and the opening of large ditches, three of which have been opened or are being opened during the past year, making in the aggregate about fifteen miles of ditch, which will greatly increase the productiveness of the soil.

VAN WERT COUNTY.

The eleventh annual fair of the Van Wert County Agricultural Society was held October 7th, 8th and 9th, 1868. The weather being very unfavorable, the fair was a failure pecuniarily. In some of the departments the exhibition was good. Vegetables and fruits were well represented, for which our county is famed. In the stock and mechanical departments the show was meager. Our Society has nine acres of land, well fenced, with a good hall and good trotting track, one-third of a mile, joining our town corporation.

There is, upon the whole, a growing interest manifested by the citizens of our county in agriculture, yet not to the extent that its importance demands, and it will require time to develop the perfection attained in the older and more densely populated counties. There is a general interest in our county in draining our lands; more real improvement in this regard than in any other. There is much of our land that is absolutely worthless for farming purposes without draining, which our citizens are learning is our most valuable land when drained.

Our county is level and heavily timbered. Our most reliable resource is lumbering, and this will last for many years to come.

Our principal crops are wheat, corn, hay, oats and flax; also vegetables and fruits. Wheat, the best crop harvested for several years; probable average per acre, 10 bushels; quality good. Corn a small crop; probable average per acre, 25 bushels; quality deficient. Hay crop good; say one-half ton per acre. Oats a fair crop; say 25 bushels per acre. Flax a small crop; say 6 bushels per acre. Potatoes a fair crop and sound—the first for several years. Other vegetables and esculents good. Fruits a small crop.

The past season was unfavorable for the farming interest in this region. The spring was cold and wet, and early summer dry, keeping crops back, and consequently there was much of the corn crop that did not mature. The latter part of the season being favorable, the fall crop was planted in good season and good order, and never promised better than at the present.

WARREN COUNTY.

The eighteenth annual fair of the Warren County Agricultural Society was held at Lebanon, Warren county, Ohio, Sept. 16, 17 and 18, 1868.

The first day was principally occupied in arranging the products and articles in the hall, preparatory to a full exhibition of the same on the two following days. The weather was very fine, and the attendance large.

The display of stock was not quite so large as the previous year, owing to the Board reducing the amount of premiums formerly offered on horses, &c., but the display was quite good, there being some very fine horses on exhibition. The exhibition of vegetables was large and of fine quality, and elicited much admiration from the visitors.

Agricultural implements of different kinds were shown in greater number than at any fair heretofore, the reason being that the Board had increased the list of premiums over former years. The specimen of grain was quite large, and of very fair quality The most attractive feature of the fair was floral hall, which was filled from floor to ceiling with all such articles that go to make up a good and interesting fair. The fruit tables were laden with nice fruit of the vineyard and orchard, which, indeed, was a very fine display in quality, beauty and size, and general attractiveness of the same.

Taking every thing into consideration, our fair was the most successful and satisfactory of any one ever held on the grounds. The receipts were large, being about $3,100.00. The expenditures were also large, leaving only a balance of about $18 in the treasury, but this is owing to the fact of having to rebuild a fence around the entire grounds during the past year.

We had no competition on field crops. The principal crops raised are wheat, corn, barley, oats and potatoes, and some sorghum. Wheat yields seventeen bushels to the acre, corn forty-five bushels, barley twenty-five bushels, oats thirty-five bushels, hay two tons, potatoes seventy-five bushels.

The election of officers for the present year was held on the 28th day of November, 1868. Our old President, Mr. Jno. H. Evans, declined a re-election.

The number of entries at our last fair were 825, and our membership now numbers 1,440. The future prospect of our society is encouraging. We own, in fee simple, thirty acres of beautiful grounds, on the hill over-looking town, (worth to-day at least $300 per acre), together with all necessary buildings, and sufficient number of good stalls and sheds, which are all paid for, and the only debt over the Society is about $1,400, for fence, &c., which we think can be paid inside of two years.

Our county, the past season, was overloaded with fine peaches and blackberries. There were thousands of bushels—and they were of fine quality—and were shipped to almost every point in the eastern and northern market. Old Warren cannot be excelled for her fine peaches and berries. The grape is also attracting much attention, and some very fine wine is manufactured in our county.

There has also been a Horticultural Society formed here within the past year, which is attracting a good deal of interest and attention.

The wheat crop has been so near a failure in this neighborhood for several years, that the farmers have almost become discouraged. There was a greater quantity of land sown last year, perhaps, than the previous year; but the yield is not so much as last year. And as to quality it is far inferior to last year's crop. As regards corn, I can not speak very definitely. We had a very wet, late spring, but still I believe there was much more planted this year than usual. But much of it was planted so late that it can never make good corn. Still we hope to have enough for all our wants, and, perhaps, a little to spare. Strawberries and raspberries were a partial failure, but there was an abundance of blackberries. The peach crop was the largest that we have had for several years. It is necessary, however, to qualify this remark a little. The budded varieties were unusually full, while the common varieties were almost a total failure. Last year it was just the reverse. The common trees were loaded down, while the budded trees were almost destitute of fruit. In view of these facts would it not be well for farmers setting out young orchards, to plant both the common and the budded varieties? The curculio has destroyed the plums this season, without any regard to quality or kind. Heretofore their ravages have been confined to the finer varieties, while the damson were left by them unmolested. Trees which, last year, were bending down with the fine blue fruit, are standing this season without a single plum. As for apples, we remember them only as things which have been in the past Here and there may be found a few knotty specimens of Maiden's Blush or Rambo, but so few and so poor that we do not feel like calling them apples, when compared with the fine fruit of previous years.

WASHINGTON COUNTY.

The seventeenth annual fair of the Washington County Agricultural and Mechanical Association was held on the Society's grounds on the 7th and 8th of October, 1868. Owing to the low state of the Society's finances, and the small amount offered for premiums, the managers did not expect "Old Washington" would come up to the standard. Rains on the 6th, and cloudy, with chilly northern winds, on the 7th. Managers began to fear their efforts were of no avail. At 11 A. M. the sun began to shine, and masses of people were seen crowding to the fair grounds. The number of entries was 453.

The Society is largely in debt, never having recovered from the damage to our grounds by troops—having been used during the war as a camp for organizing regiments. Number of members, 194.

Owing to untimely rains and drouth, the crops are small.

WAYNE COUNTY.

The Wayne County Agricultural Society held its nineteenth annual fair in Wooster, September 30th and October 1st and 2d, 1868. We have a membership this year of 388 —a decrease from last year of 103. Number of entries over 1,200, an increase of over 100 from last year. The receipts will leave us a balance in the treasury after paying all indebtedness.

There had been, during the summer and fall, an increased interest manifested by the citizens of the county in the affairs of the Society, which would, but for bad weather, have resulted in our having had the best and most profitable exhibition ever held in the county. As has been the case for the last four years, the first day was rainy and stormy. The second and last days were very unpleasant. Considering the inclement weather, we claim we have done well, and that our fair was a success; but with good weather we could have done a great deal better.

The display of cattle was larger and better than for several years, including Durhams, Devons, superior natives, and fine specimens of the celebrated imported Holstein or Dutch cattle, which were introduced into this county last year, by a stock company composed of some of our most enterprising farmers.

The other departments were quite well represented, as the number of entries show—some, however, making up in quality where they lacked in numbers or quantity.

The wheat crop of 1868 will average 20 bushels to the acre. Rye and oats about an average. The corn crop was an extra large one; in several cases 150 bushels of ears were husked from an acre of upland. Bottom corn yielded more than 200 bushels of ears to the acre in quite a number of instances.

WILLIAMS COUNTY.

The twelfth annual fair of the Williams County Agricultural Society was held on the fair grounds, as appointed, on the 29th and 30th of September and 1st of October, 1868. The first day of the fair was a mild, pleasant day, which brought out the largest crowd of people that had ever attended the fair on the first day. Everything looked prosperous; 925 entries were made. But the two succeeding days were quite the reverse; it rained both days, so as to stop, in a great measure, the attendance that would have been if the weather had been propitious. But, withal, we have no reason to feel discouraged. Although we did not make enough money to defray all expenses, the spirit that was shown by exhibiters was plain proof that our fairs are progressive. The interest manifested was very general as a living, working institution, and had the weather been favorable we should have had a balance in the treasury.

The products of agriculture in this county the past year were very good and highly remunerative. Wheat was the best crop we have had for several years; the number of acres I cannot give; the yield was from 8 to 30 bushels per acre. I think the general average about 15 bushels per acre. Corn and oats good in quality and yield. Hay not as great in quantity as formerly, owing to a dry spell in June that cut it short. Potatoes a fair yield. Flax, a large amount sown for the seed; the yield good. Apples a small crop, owing to the buds being killed last winter. Peaches the same. Small fruits good.

The exhibition of horses of the different classes was large in number and fine in quality. Cattle good; quite a spirit of improvement in this class. A number of gentlemen have bought and brought in thoroughbred animals the past summer. Sheep, a good display in quality and quantity. Hogs, a marked improvement in the different breeds. Sorghum has become one of the permanent crops of the county; the amount I am not able to give. Number of members, 370.

Our county is comparatively new as compared with the rest of the State, but we have one of the best counties of land, and we think we shall be prepared in a short time to compete with any other county in the State for productiveness of the soil. We think there are few counties that have shipped more produce since July than we have. There are four railroad stations in the county. I will give the number of pounds that have been shipped from Bryan Station, from July 1 to December 25. The report from the other three stations I was not able to get:

Articles shipped.	Number of pounds.
633 head of cattle	540,000
1,188 sheep	216,000
3,163 live hogs	856,000
1,323 dressed hogs	230,869
41,873 bushels wheat	2,512,605
11,272 bushels oats	300,720
1,181 bushels corn	60,165
Butter	66,488
Clover seed	45,250
Flax seed	524,481
Pearl ash	58,456
Wool	78,652
Total of the twelve articles enumerated	5,555,386

WYANDOT COUNTY.

The Society numbers 266 members. The expenses of last fair were more than usually heavy. The grounds and buildings were very much out of repair, requiring the expenditure of large sums to put them in a condition suitable for holding the annual fair. These heavy expenditures compelled the Society to pay only a per cent. of premiums awarded. In the future, however, we expect to be better able to pay, as nothing further will be necessary in the way of repairs to buildings and grounds for several years. As to crops, would say that wheat and corn are the staples of this county. The crops for the last year cannot, from the data we have, be estimated. Suffice it to say that they were more than usually good.

INDEPENDENT SOCIETIES.

HIGHLAND UNION AGRICULTURAL ASSOCIATION.

Our Society was organized in 1860, and has held an annual fair each year since. It was organized to accommodate portions of Portage, Geauga and Trumbull counties that could be better accommodated at this point than at the county fairs, and was designed in no way to interfere with the county societies.

We have from the first met with success far beyond our most sanguine expectations, and it is believed that this success is mainly owing to the fact that we have sought to make it exclusively an Agricultural Society. No swings, shows, or gaming stands are allowed upon the grounds, and the strictest vigilance has been exercised to exclude everything that had a tendency to interfere with the legitimate purpose of the Society.

The Society owns seventeen and a half acres of land in the incorporated town of Garrettsville, well fenced, and in a location admirably adapted for this purpose, with large and commodious buildings which have been extended from time to time as the requirements of the Society have demanded and its funds permitted.

We number 370 members, and our last fair, notwithstanding the very unfavorable season, has had no superior and few equal exhibitions, either in a remunerative point of view or in the number and quality of the articles on exhibition. The entries amounted to 1200. There was an unusually small amount of cattle on exhibition, owing to the prevalence of the cattle epidemic near here.

CUYAHOGA COUNTY.

The 13th annual fair of the Union Agricultural Society was held in Twinsburgh, September 1st, 2d and 3d, 1868. It was held under the most discouraging prospects, with any expectations of its meeting with that success it would have met with under more favorable circumstances. The drouth in this part of the State was particularly severe, discouraging, as it must, every exertion of the farmer and agriculturist. The Society congratulates itself in being able to say they reduced their debt of nine hundred dollars ($900) to eight hundred dollars. There was as good a show of cattle, in number and quality, as was ever at the fair. Of the horse department, there was a very fair representation, in number and quality. Sheep and swine are not generally very largely represented here, although there was a very creditable show in each of these departments. The vegetable department was not so handsomely represented as is usually customary, for two reasons—first, because the fair was held so much earlier than usual; and secondly, the drouth.

There is a manifest feeling in this vicinity to go back to the old time-honored mode of conducting agricultural fairs, and conduct them upon a purely agricultural and mechanical basis. County and township fairs are losing all their worth and interest to the farmer, agriculturist and mechanic, by more attention being paid to horse jockeying, races, and many other things of this character, which have no claims for attention from the officers of agricultural societies or their members. It diverts the minds of the people from the original intentions and objects of agricultural fairs; and unless they can be brought back to the old standard, it is useless to attempt to carry them on any longer.

This Society now owns fourteen acres of land with suitable buildings, and a debt of eight hundred dollars, which the officers hope in the coming season to materially reduce, if the season should prove favorable.

ESSAYS, ETC.

AGRICULTURAL SURVEY OF BELMONT COUNTY

A PRIZE ESSAY.

BY ISAAC WELSH.

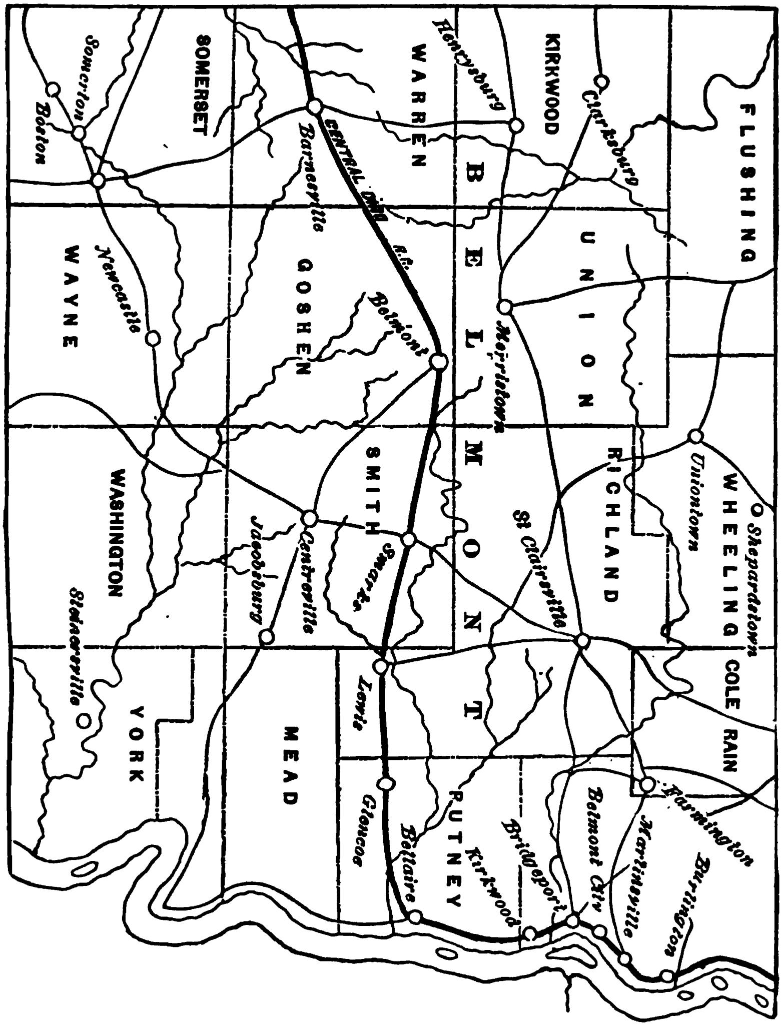
Belmont county was organized September 7th, 1801, by proclamation of Governor St. Clair, and was the ninth county formed in the northwest territory. Its name is said to be derived from two French words, *Belle* and *Monte*, signifying a fine mountain. Its settlement commenced several years prior to its organization, and it may be regarded as one of the earliest settled counties in the State. There are many incidents of a most thrilling character connected with the early settlement of the county, which grew out of the pre-occupancy of the territory by hostile tribes of Indians. Constant preparations had to be made by the settlers for defense and protection, and still many depredations were committed, to the great annoyance and injury of the pioneer settlers. Some of the most deadly encounters occurred with these hostile tribes before they were finally driven off. A minute narrative of the difficulties encountered by the first settlers, and their exciting contests with the Indians, would, no doubt, be interesting to the general reader, but would not come properly within the contemplated limits, or objects, of a "report of the agriculture of the county."

Belmont is bounded on the east by the Ohio river, on the north by Jefferson and Harrison counties, on the West by Guernsey, and on the south by Monroe.

The county contains an area of 527 square miles, or about 337,500 acres, and is watered by three principal streams, to wit: Captina, Wheeling, and McMahon's Creeks. These streams have each its origin in the western part of the county, and run parallel with each other east, at pretty equal distances from each other, until they reach the Ohio river. Other smaller streams have their outlet in the Ohio river; and a branch of Stillwater, heading in the northwest part of the county, runs northwest until it empties into the Tuscarawas river.

The county is well watered, those principal streams affording fine water power for machinery, which, with numerous smaller streams and springs that everywhere abound, afford an abundance of good, pure water for stock and all agricultural purposes.

Appended see skeleton map of the county, giving the townships, principal streams, National pike, railroads, county seat, and principal villages.



The uplands of the county are generally rolling, and that portion bordering on the Ohio river and the southern row of townships may well be called hilly. The tops of the river hills have an elevation of about 500 feet, while the highest lands in the county reach an altitude of near 600 feet above the Ohio river.

The entire county has been heavily timbered, and a good supply of timber yet remains; much of it on lands unsuited for cultivation. The prevailing kinds of timber, originally, on the bottom lands along the Ohio river and principal streams were sugar, beach and white walnut, hickory, buckeye, ash, cherry, elm and honey-locust, with a few oaks, and on the lowest part of these lands by sycamore. Pawpaw, dogwood, spicewood and grape-vines were also common. On the uplands black and red oaks, white oak, hickory, popular, locust, sugar and maple, beach, iron-wood, dogwood, and, in some places, linn, chestnut, pin-oak, chestnut-oak and gum.

The bottom lands are mostly composed of a rich alluvial deposit of sand and vegetable matter from the streams and washings from the hill-sides, with a thick covering originally of vegetable mould. The soil is well supplied with lime, and usually of great thickness, varying in depth from eighteen inches to several feet, and is based on a porous sub-stratum of gravel, coal, sand, clay, and debris of lime and sand-rock. Much of this land has been under active cultivation for the last sixty years, and some of it for seventy years, without any known diminution to its capacity for productiveness. The quantity, however, of these bottom lands, when compared with the uplands, is not large.

The eastern half of the county has almost invariably a limestone soil. The uplands are composed of lime, clay and sand, with a covering formerly of vegetable mould, and rest on clay subsoil mixed with detached lime and sand rock.

The western half of the county differs but little in the character of its soil from the eastern, except at some of those points where the lands reach their highest altitude, which is about 600 feet above the Ohio river. In these localities, embracing an area of less than one-seventh of the county, the soil is sandy, mixed somewhat with clay, but comparatively free from lime, with a subsoil of sand, clay and shelly sand rock. The lands of the county, though generally rich, vary much in their composition and productiveness.

The following reconnoisance of the river hills near Bellaire, made by Professor J. Dille, of Newark, in 1859, gives a pretty correct idea of the geological formation of the county, its mineral resources, and character of its soils.

RECONNOISANCE MADE IN JULY, 1859.

——— ———, Esq:

Dear Sir: In the short reconnoisance I made of the mineral resources of that part of Belmont county which lies to the south and southwest of Bellaire, I saw enough to satisfy me that a country so rich in those elements of wealth was worthy of a more minute and elaborate survey.

As only two days were devoted to field investigations, and one of them was so rainy that our researches were accompanied with great discomfort and labor, the area examined was necessarily limited; but, limited as it was, every step was full of interest.

Accompanying these notes I give you a rough attempt at a vertical section of the geological formation of the country explored, which is only an approximation to the true superposition of the strata, for as no section could be found which presented a continuous disclosure of the stratification from base to summit of the hills, I am not able to define precisely the relation of all the strata indicated. Every stratum in the accompanying section was found, but as they were disclosed at places somewhat distant from each other, and some, or many of them were covered with debris in a large part of the field, I had to reconstruct the section, or associate the strata from the best observation I could make. I proceed to notice the minerals of economical value in the order of their superposition:

1. The compact fossiliferous sand rock. This is valuable as a building material, and is so abundant that it can always be obtained at the minimum price. Portions of this rock weather well, and will be found durable in all structures. I learn that the towers, piers and abutments of the Wheeling bridge are of this material.

Immediately overlying this rock is

2. *The six feet vein of bituminous coal.* From the imperfect fossil remains in the sand rock, which are nearly all decorticated, I infer that this is below, or, at least, not above the middle series of the coal formation. This is a good coal for domestic use, but it is said to be rather too sulphurous for iron smelting. The large deposit which will yield at least 8,000 tons to the acre, makes it valuable, and secures an inexhaustible supply of fuel for a large city. Over this lies a shale of over one foot, which sustains

4. A heavy bed of compact limestone of *twenty feet* in thickness, some of which is magnesian, and others pure carbonate. This rock does not quarry well for building material, and its chief value will be its use for cement and manure, which is no small item.

5. Next succeeds a compact *fire clay*, plastic when exposed to the weather. In some places it is free from lime and valuable for all purposes, where a refractory material is required to endure high temperatures. Upon this lies

6. A *sand rock* of some thirty-five feet thickness, which is largely used in masonry, and found to be durable.

7. The *four feet vein of bituminous coal* is said to be nearly free from sulphur. Specimens sent me for analysis are entirely destitute of that element, and from my experiments will make a good coke, and I think will prove a fair gas coal. It has not been much worked as yet, and de-

serves more attention than it has received. As usual, this coal is covered with

8. A bed of *compact fire clay*, purer, but in some respects similar to No. 5. It is of a finer texture and quality, and more valuable.

10. Next is a succession of *lime rock*, similar to No. 4; clay, slate and clay, nowhere very full disclosed, of 120 feet.

11. A cannel and bituminous coal in some places succeeds, but not so persistent as some other strata, under a large mass of

12. *Hydraulic limestone.* This deposit varies in different places from ten to twenty-five feet; the average may be set down at fifteen feet. This will doubtless become an article of great commercial value.

13. A *lime rock of fifteen feet.* Some of this, in places, will make a desirable building stone. But it will require to be sawed rather than hammered, as it is very friable, but will polish well, and, as it is sometimes filled with coral fossils and white, will be esteemed for ornaments.

14. We have now forty feet of sand rock, in some places compact and in others slaty like.

15. A micaceous, laminated or slaty sand rock, which will probably stand fire well. It deserves a fair trial. (This is the surface stratum on the hills at Bellaire.)

16. This interesting deposit we found on the waters of Wegee Run. Large masses of clay, iron-stone and nodular ore are found in it. One I found we estimated would weigh nearly a ton. On this lies a bed of

17. Splint or laminated coal of five or five and a half feet. In the ravine where the three last named strata are found a most interesting section from twenty to fourteen were exhibited, as we descended in our return to the river. The whole series is interesting, as well in an economical as a scientific point of view.

20. The *black marble*, when polished, will be extensively used for ornaments and mosaic pavement.

The upper portions of the section lie too near the summit of the hills to have any great value, with the exception of the limestone iron ore. It is not to be supposed that in so brief a survey we embraced all the mineral wealth of this interesting region. I desired very much to trace several of these strata from the base to the summit of the hills. This would have required a careful survey of several miles in extent. Nor do I suppose that all the strata noticed are persistent. Some are doubtless replaced or compensated by others, which in places may be of great interest or value. So rich and varied are the deposits in these hills, that years may elapse before all are discovered, and the latest may be the most desirable.

The dip of the strata here is southward, and at the mean rate of thirty feet to the mile, so that a horizontal section of a few miles in any direction discloses great varieties of mineral constituents. The coal of these hills, so varied and abundant, furnish the means of unlimited motive power, the iron ore with such abundant material for smelting at hand, will soon be developed; the fire clay to be manufactured into fire brick, tile, porcelain, etc., will be among the items of mineral wealth, and supply a large amount of productive industry; the various lime rocks, from the carbonate to the calcareo-silicious, for cements, manures, and structures of every kind in the useful and ornamental, is another source of wealth, which will give employment to a great many operatives, from the highly skilled to the daily laborer.

Approximate Geological Section of the Belmont Hills in the vicinity of Bellaire; estimated height of Hills 500 *feet from low water of the Ohio River to the summit.*

No.	Feet.		ROCK OR MINERAL.	REMARKS.
26	50		Debris.	This elevation is found on few summits. Soil thin. Timber Spanish, or chestnut oak.
25	12		Carb. of lime in round masses; calcareous iron ore.	The summits are crowned with chestnut trees and black oaks. Sugar maples on the line of the coal stratum.
24	2		Bituminous coal.	
23	90		Yellowish clay shale, with beds of plastic clay, free of lime.	White oaks chiefly; soil favorable to fruits and small grains.
22	20		Ferruginous sandstone.	Rich soil to the base of the hills. Trees—sugar maple, black and white walnut, red elm, ash, etc. Favorable for vines and fruits of all kinds.
21	1		Coal.	
20	2		Black marble.	
19	4		Clay sand rock.	
18	12		Clay shale, with iron nodules.	
17	5		Splint coal.	
16	10		Shale, with nodular iron ore.	
15	10		Slaty micacious sand rock.	This is the level of the hill-top, back of Bellaire, and extending northward along the river valley.
14	40		Compact sand rock.	
13	15		Lime rock.	

No.	Feet.		ROCK OR MINERAL.	REMARKS.
12	15		Hydraulic lime.	Timber—sugar maple, black and honey locust, etc. Good corn and small grain soil.
11	3½		Cannel and bit. coal.	
10	120		Clay, shale, clay slate, and lime rock.	
9	15		Compact fire-clay.	It is remarkable that the hill-slopes here are generally richer in soil than the alluvial valleys or bottoms, and more cultivated. The latter are often gravel beds, and sometimes covered with larger stones, whilst the former are a mixture of decomposed clays with lime and coal debris.
8	5		Shale.	
7	4		Bit. coal.	
6	35		Sand rock.	
5	15		Fire-clay, compact.	
4	20		Compact limestone.	
3	1		Shale.	
2	6		Bituminous coal.	
1	80		Compact sand rock, with coal fossils.	

As will be seen by the foregoing survey and report, our geological formations belong to the carboniferous period, and Belmont is included within the great Appalachian coal measures of the country. We have five or six distinct beds of coal, which lie above the Ohio river, and which are, at different points in the county, brought into active requisition. These are not all persistent, but generally have their equivalents, some of which are worked on the runs and larger streams throughout nearly the entire county. The aggregate thickness of the several coal strata being worked in the county is about twenty feet.

The following extract of a letter from one of our most intelligent citizens of the county, now connected with the Bellaire Nail Factory, is given to show further our mineral resources and coal mining operations:

"MINERAL RESOURCES.—*Coal.*—We have in this county, above the level of the Ohio river, no less than six distinct veins of coal, four of which are valuable, and will eventually be worked extensively:

"1st. The six-feet vein, or river coal, is the vein that is worked so extensively on the Ohio river, and on Wheeling and McMahon's creeks. For all purposes except smelting iron ore, this is most valuable coal, but contains so large a percentage of sulphur as to render it unfit for use in the blast furnace. It is used exclusively, however, in the puddling furnaces of the iron mills in Wheeling, Bellaire and Marietta. For all purposes where heat alone is desired, it stands second to no other coal; and it is extensively used on steamers plying the Ohio river, and on engines on the C. O. R. R., while it is largely shipped to various points through Ohio, Indiana and Illinois, as far west as Chicago. This vein of coal underlies the entire county; but south of Heatherington's mines, immediately below this place, the vein dips below the surface, and can only be reached by shaft, which increases the expense of mining very considerably. From this vein of coal there is now mined in the county about 4,000,000 bushels, or 160,000 tons per year, for which there is paid to miners about $120,000.

"The dip of this vein is to the south-east, so that mines opened on this side the river drain themselves, an advantage which any one familiar with coal mines can readily appreciate. The coal which we use in the rolling mill costs us, dumped down at the furnace, four cents per bushel, or one dollar per ton.

"2d. The four-feet vein of coal which lies about seventy feet above the six-feet vein, is freer from sulphur than the latter, is a harder coal, and I believe will be found well adapted to smelting iron, though no experiments have been made with it in that direction, to my knowledge. In many respects it resembles the Hocking coal, burning cleaner than the six-feet vein, and leaving a white powdery ash. It is almost identical with the Salineville coal. It is hard to account for the neglect of this coal, and I have often attributed it to the fact that men disliked to work a four-feet vein when a six-feet vein was being worked so near, where mining was so much easier. It will be but few years, however, before the value of this coal will be recognized, and the wealth of the county largely enhanced by its development.

"3d. One hundred and forty feet above the last vein there is a vein of semi-cannel coal which is of no particular value, and will not pay for working. The vein is between three and four feet in thickness.

"4th. Ninety feet higher than the last-named vein, we have a five feet vein of 'splint coal,' which is almost entirely free from sulphur, and for this reason is admirably adapted to smelting iron. In furnaces of good draft it burns well, and leaves a very white ash; but in the ordinary open fire-place it burns slowly, and leaves a huge pile of ashes. The residuum of this coal is so great that it drew from a well-known citizen of Saint Clairsville, years ago, the remark that he never believed the story of the miraculous feast of the loaves and fishes, and the many fragments, until he moved west and used the 'upland coal' in his grate; for he put a bucket of coal on the fire, and from it carried out a wheelbarrow full of ashes.

"No effort has been made here to utilize this coal, though it is found in great plenty all over the county in the upland farms.

"LIME-STONE.—This material exists in great quantities, and lime is being largely made and shipped by river and rail from here. I have no means of knowing the amount so shipped, but should say about 300 bbls. per week, beside the home consumption. This lime is very superior in quality, and the export demand is steadily increasing.

"FIRE-CLAY.—There is a vein of this material, fifteen feet thick, but it is not being worked at any point in the county. It offers an extensive and remunerative field for capital and energy.

"IRON-ORE is found in paying quantities in many parts of the county and has been worked to some extent at Martin's Ferry, but to what extent I am not aware. The furnaces at that place are now using the Lake Superior ore.

"There is another vein of coal in the county, but lying so far below the surface (from 500 to 800 feet) that it has, so far, deterred any one from working it. This is the same vein as that now worked at Steubenville, and is the very best kind of coal for smelting iron. A shaft could be sunk, and the necessary machinery procured for raising the coal at an expense not exceeding $50,000, and to a company with the necessary skill, energy and capital, there is no more remunerative enterprise. This vein of coal will reach near eight feet in thickness, and is a mine of wealth to the country."

The stratum of semi-cannel coal referred to in the foregoing extract as being of but little value in the river hills, is, in many places back from the river, being extensively worked for domestic uses, and is considered a good coal for heating purposes, and for steam. It is overlaid generally with a smooth sandstone rock, which affords a fine roof when the coal is removed.

PETROLEUM.

A number of wells were sunk in various parts of the county a few years since for petroleum, but without any positive success. The best show of oil was on Captina creek, where there had been strong surface indications from an early day. At this point, a distance of eight or nine miles from the Ohio river, several wells were sunk to a depth of from 300 to 450 feet, when the work had to stop on account of the continued pressure and caving in of a soft kind of shale. This bed of shale, which varied in thickness from fifty to over a hundred feet, baffled the skill of the workmen in tubing it off, and the work has been suspended.

A considerable show of oil was found in nearly all these Captina wells, at a distance of 150 to 200 feet from the surface. Some of them yielded eight or ten gallons per day, without pumping. Should better skill be attained in the art of tubing, the work will doubtless be renewed, and may yet prove a success.

CLIMATOLOGY.

Belmont county is situate in the 40th degree of north latitude, and longitude 81° west. The following table, kept by Mr. Joseph Harris, at St. Clairsville, shows the mean temperature at daylight and at noon of each month, for three years, commencing with January, 1864. Also the amount of rain-fall and snow for the same period. Height above low water in the Ohio river at Wheeling, 595 feet:

						Inches.		Inches.
1864—January,	Mean temperature at daylight,	23	—at noon,	31	Rain,	1	Snow,	14½
February,	" "	"	"	33	"	1⅛	"	6¼
March,	" "	" 29	"	37	"	5⅝	"	7
April,	" "	" 31	"	50	"	6 5-16	"	2
May,	" "	" 46	"	68	"	5 2-8	"	..
June,	" "	" 57	"	77	"	2⅜	"	..
July,	" "	" 64	"	84	"	3¾	"	..
August,	" "	" 60	"	79	"	10¼	"	..
September,	" "	54	"	66	"	5½	"	..
October,	" "	" 42	"	54	"	5⅞	"	..
November,	" "	" 37	"	43	"	4⅜	"	..
December,	" "	" 27	"	32	"	7½	"	4¾
						53 9-16	"	34½

Coldest day, 18th February—6° below zero. Warmest day, June 26, 92°.

Last frost, April 29—large white frost, ⅛ inch ice; season backward, wet and cold; wheat badly winter-killed.

May 5, a few blooms on cherries, and several trees look white.

June 1, locust trees in bloom.

						Inches.		Inches.
1865—January,	Mean temperature at daylight,	16	—at noon,	22	Rain,	1⅞	Snow,	14¾
February,	" "	" 28	"	32	"	1½	"	8½
March,	" "	" 37	"	52	"	5	"	4
April,	" "	" 45	"	58	"	4½	"	¼
May,	" "	" 50	"	65	"	6⅜	"	..
June,	" "	" 63	"	79	"	4¾	"	..
July,	" "	" 63	"	66	"	7	"	..
August.	" "	" 59	"	76	"	1⅜	"	..
September,	" "	" 64	"	74	"	4¾	"	..
October,	" "	" 42	"	54	"	2⅞	"	..
November,	" "	" 34	"	46	"	1⅛	"	½
December,	" "	" 27	"	39	"	4	"	3¾
						44⅞	"	31¾

Coldest day, Feb. 13—4° below zero. Warmest days, June 6, at 90°, July 6, at 90°.

May 2, very large frost, ⅛ inch ice; on 12th, large frost—killed all vegetation, grapes and cherries; 24, last frost; locust in bloom, 19.

Oct. 10, frost; 30, vegetation all destroyed.

								Inches.		Inches.
1866—January,	Mean	temperature	at daylight,	25	—at noon,	29	Rain,	4¼	Snow,	3½
February,	"	"	"	25	"	32	"	4⅝	"	5
March,	"	"	"	33	"	40	"	5¼	"	7½
April,	"	"	"	44	"	58	"	3	"	10½
May,	"	"	"	46	"	66	"	2⅛	"	..
June,	"	"	"	56	"	76	"	10⅝	"	..
July,	"	"	"	65	"	78	"	4 7-16	"	..
August,	"	"	"	56	"	73	"	6 3-16	"	..
September,	"	"	"	57	"	65	"	5⅝	"	..
October,	"	"	"	42	"	55	"	5⅛	"	⅛
November,	"	"	"	36	"	42	"	2¼	"	1
December,	"	"	"	23	"	26	"	3⅝	"	11½
								57¼	"	39⅛

Coldest day, Feb. 16—9° below zero. Warmest day, 16th July, 92°.
Cherries in bloom, April 19. 10 frosts in May. May 28, trees in bloom.

Owing to the high altitude of most of the uplands of the county, and their rolling and uneven surface, they are generally dry and arable, and but few places need artificial drainage. The cultivation of the soil, although not studied generally as a science, nor even practised with that degree of system its great importance demands, is nevertheless receiving much consideration, and has already been made the subject of vast improvement. In the early settlement of the county plowing was done indiscriminately, with little regard to rotation of crops, or grasses, or rest for the lands. This resulted, partly, from necessity, but doubtless not exclusively so. The lands were covered with a dense forest of heavy timber, which had to be cleared off, and the lands fenced and prepared for cultivation. To prepare a small farm thus for cultivation took much time and labor, and the owners, as fast as they prepared a field, pressed it into the service, and kept it there continuously; many of them for 10, 20, or 30 years, or until they made additions to their farms by purchase, or sold out to their better-contented neighbors. Many of these hardy pioneers, before whose well-directed blows the forests were made to disappear, and the wilderness to give way to rich fields of luxuriant grain, not satisfied with their attainments, nor willing to submit to the necessary innovations of a more stringent civilization, pulled up stakes, and migrated further west—hunting the border, where their notions of social order and civil government could be more fully developed, and their wishes better realized than in densely settled communities.

It was found that this system of annual plowing and continuous crops was wholly unsuited to a surface so uneven and hilly as most of our uplands were, however rich, and threatened utter exhaustion of the soil. A better system of cultivation now happily prevails, yet it still has its exceptions.

ROTATION OF CROPS

On most of our lands was found to be almost indispensable, and the system, in some shape, has for many years been practiced. This system is of course more or less varied by the quality and character of our lands. The rich bottom lands of the Ohio river and principal streams traversing the county, are the favored recipients from the washings of the hill-sides adjacent, many of which are equally as rich as the bottoms. This taken in connection with their great depth of soil, renders them comparatively independent of what would otherwise be considered essential to an enlightened system of cultivation. Many act upon this latter theory, and pay little attention to rotation of crops on these rich bottom lands, but are probably the losers ultimately. The custom of rotation for our first-class bottom lands may be stated thus:

Clover two years; corn two years; oats one year; wheat one year, with clover seed sown in spring, or timothy in fall, and clover in spring, to stand again two years.

Some of these lands are too strong for oats and the crop is substituted with corn. Two crops of clover may be mowed without any special detriment to this class of lands. Of the second-class bottom or first-class uplands, one crop of corn only should follow clover or other grass, except where a crop of clover has been plowed down, or the land well manured, or where it has been in grass for a longer time than two years; then oats, to be followed by wheat, and again clover or other grass. These lands would all be improved by pasturing, and finally plowing down a good crop of clover instead of mowing, but this is not generally practiced.

The treatment of the thinner quality of clay and sandy lands has been similar to the above until within the last ten or twelve years. They are now more largely devoted to stock and pasturage purposes, to which the whole county seems admirably adapted. Fields are plowed a great deal less than formerly, and are permitted to lie in grass for half a dozen years or more, on an average, when they are plowed up and planted in corn, followed with oats, then with wheat, with very general good results.

Clover is not generally used for pasturage purposes, as it freezes out commonly the third year. Timothy or red top is better, but the great dependence is on blue grass, *Poa prœtensis*, which is indigenous to our soil and climate, and is much more nutritious, and more productive as a pasturage, as it forms in a few years a thick sward, without sowing, which improves for years. This is considered our very best pasture land for cattle and sheep, and when broken up in proper season, a sure crop for corn, potatoes, and other hoed crops; but will not do as fallowed ground for wheat, as the grass is sure to reappear to such an extent as either to destroy or greatly injure the crop. Our limestone soil, which embraces the larger part of the county, is better adapted to blue grass, and is capable of much greater endurance, without any signs of exhaustion from constant plowing, than the lands comparatively free from lime.

Within the last fifteen years, and since the partial failure of the wheat crop in this county, the attention of farmers has been largely directed to the stock business, and particularly that of sheep. This fact has greatly diminished the area of lands plowed or cultivated, and has given the lands time to rest. The good results of this change, on the capacity of the lands to produce grass, and also grain when plowed up, is beginning to be everywhere apparent. Owing to our improved mode of tillage, and especially the greater amount of pasturing, and less area of plowing, our lands are unquestionably better and more productive, as a whole, than they were twenty-five years ago—some of them very much better. There are doubtless exceptions to this, with some of our lands, but they have their causes generally in a want of conformity to the prevailing disposition to plow less than formerly, and to pasture more.

According to the assessor's returns, our lands were divided in the spring of 1867, as follows:

Cultivated lands	132,567	acres.
Uncultivated, or timber lands	97,824	"
Pasturage	81,433	"
Meadow	25,676	"
	337,500	"

Average size of farms, about 100 acres.

The amount of pasture lands is rapidly increasing, and is doubtless considerably greater at present than the above figures show, and the amount of cultivated lands less. Some of that returned as uncultivated is enclosed, and affords fine pasturage.

WHEAT.

The wheat crop in Belmont county has been gradually diminishing for twelve or fifteen years past. Not from exhaustion of the soil, nor lack of adaptability of our lands, but from other causes foreign to these, and which were hoped would be but temporary. First the wheat midge, or red weevil, gradually made its appearance, and made sad havoc among the best varieties then raised. The kind which was then in almost universal use was a white smooth chaff wheat, called "White Blue-stem," or Congress wheat, the seed having come from the Patent Office at Washington. This variety was in great favor, as producing a fine quality of wheat and an abundant yield. The midge was especially severe on this variety, and has almost entirely destroyed its cultivation in the county. The White Mediterranean, a bearded wheat, was substituted to a great extent, especially on the bottom lands and richer variety of uplands. This wheat was found to ripen, when first introduced, from 25th of June to 1st of July, which was from seven to ten days earlier than the varieties previously used, and consequently escaped, to a great extent, the ravages of the weevil and rust. For these reasons it was in general favor and considerably cultivated; but it was never regarded as a first class wheat to produce, nor even of first quality. The grain was not fair, having a rye appearance, when it was first introduced into the country, but when properly manufactured, made an excellent quality of flour. This variety has been undergoing a rapid change since its first introduction, both as to time of ripening and appearance, if not in actual quality. It ripens now a full week later than when first introduced, and is fairer wheat, and believed to be of better quality; but the lateness of ripening has proved a great drawback to its production, as it subjects it to the attacks of the midge and the unfavorable effects of the hot July suns, producing blight, rust, &c.

"Weevil Proof" has been pretty well tried by many of our farmers, but not generally approved. It seems, so far, to be reasonably secure against weevil, but is liable to all the other ills that befall wheat, and is at best not productive, and only of second quality.

The "Old Red Chaff Beardy," which, thirty years ago, had been our principal staple in the wheat varieties, but nearly abandoned to make room for new introductions, is again in some places being introduced, but with what results, as to weevil, rust, &c., is not fully known.

A great desideratum to successful wheat raising in this locality is in procuring a variety that will ripen early. It matures better, and is not so liable to be affected by either rust or weevil, or sun blight. This object might be attained by frequent importations of seed. It is the nature of wheat, in some degree, to assimilate itself, in ripening properties, to the character of the soil and peculiarities of the climate. Were the seed again imported from the Mediterranean or Baltic, it would probably ripen as early as it did upon its first introduction into the country. Other early varieties may be procured that will yield better than the Mediterranean, and be a better quality. The "White Blue Stem," when first raised in the county, was a week earlier in ripening than now.

Spring wheat has been experimented on to some extent of late years, but not with very satisfactory results. The lateness of the season for ripening exposes it to the fatal attack of the weevil, and subjects it to blight, rust, &c. Other varieties may be introduced which will finally succeed.

The annexed table shows the production of wheat in the county for the past seventeen years:

Years.	Number of acres sown.	Bushels produced.	Bushels per acre.
1850	39,189	667,311	17.0
1851	38,106	563,467	14.7
1852	34,738	508,430	14.6
1853	33,331	394,852	11.8
1854	34,918	320,965	9.1
1855	35,514	555,548	15.6
1856	32,893	375,538	11.4
1857	37,686	403,566	10.7
1858	28,616	216,771	7.5
1859*	27,125	106,122	3.9
1860	22,635	189,634	8.4
1861	23,183	242,174	10.4
1862	26,652	382,971	10.5
1863	23,588	287,256	10.2
1864	21,230	172,026	8.1
1865	18,508	153,887	6.9
1866†	16,445	37,686	2.8
1867	12,175	140,137	11.5

* Injured by frost in June. † Winter-killed, but principally by freezing and thawing in March.

By the above table it will be seen that the falling off in area of acres sown was, from 39,189 acres in 1850, to 12,175 acres in 1867, or about two-thirds; and in aggregate production from 667,311 bushels in 1850 to 140,137 bushels in 1867. The falling off in yield per acre is 5½ bushels; but it will be seen that the yield per acre for 1867 is greater than the average in the county for the past ten years, while it is one and a half bushels less than the average for the State.

Belmont was one of the dozen counties that constituted what was called the old "wheat belt" of the State, and has always been expected to produce more than an average yield, but for the last ten years has fallen short.

However discouraging this showing may appear, we are not by any means disposed to accept of the situation as one that cannot be helped. We have the soil, the climate, and, we think, the skill to raise wheat; and, while many of our best farmers have, within the last ten years, turned their attention largely to the stock and wool business, they are only preparing their lands with a fresh infusion of new life, to be appropriated to successful wheat raising whenever they may deem it expedient and proper to turn their attention in that direction.

TILLAGE.

The early mode of tillage in the county for wheat was to plow fallow ground before harvest, or early in August, and stir or plow again early in September. Then seed with drill or sow broadcast and plow in with shovel, or harrow thoroughly. This was usually done from the tenth to the last of September. Oats stubble plowed once, and wheat harrowed in or put in with drill or shovel when stubble not too heavy. The surplus manure from the barn was usually put on the oats stubble before plowing. Wheat thus put in seldom failed to produce good returns.

Comparatively but little fallow ground is now used for wheat, and that fact will doubtless account to some extent for our decrease in yield per acre. Our limestone soil, which is our best wheat land, is generally hard to break up in June, July or August, and can only be broken by increasing the power, which is attended with increased costs, and at a busy season of the year. Another difficulty occurs—fallow ground broken up for wheat must be free from blue grass, or the grass will injure the wheat. Nearly all our fields lying in grass three or four years contain too much blue grass for wheat, and must be worked in corn or some other summer crop before they will be prepared for wheat.

To keep the blue grass down requires pretty constant plowing, which is deemed inconsistent with a proper rotation of crops, and especially with the interests of a stock growing county. These causes have materially changed our mode of tillage, and reduced the area plowed for wheat. Land now lies in grass longer than formerly, as before stated; is then plowed up, planted in corn one or two years, as to quality of land, then oats (or barley in rare cases,) then wheat, to be sowed down with clover or timothy, or both, as is frequently the case for meadow.

Some sow wheat among the standing corn, but it is not much practiced. It leaves the surface of the land in bad order, and is not regarded as a sure crop. Others cut up the corn, and plow and sow wheat; but the unavoidable lateness of this operation subjects the crop to all the evils which cluster around the wheat crop in this community, and renders it an uncertain crop. Clover plowed down for wheat would doubtless be attended with good results, but it has not been practiced to any considerable extent in the county.

Thirty years ago 1¼ bushels of good seed wheat was considered ample for an acre; now a bushel and a half is required. The former would no doubt be sufficient if it would all grow, but much of it, of late years, does not germinate, and a bushel and a half is found to be little enough to seed the ground. This additional requirement of seed is accounted for by some in the theory that threshing by machine cracks or breaks a considerable portion of the grains, and thus prevents their germination and growth. Whether this theory will do to depend on is not clearly established, but doubtless many grains are broken or cracked in threshing with machinery so as to prevent their germination.

Some thresh their seed wheat by tramping it with horses, on the old style, to prevent injury to the grains.

The corn crop of the county for the past ten years has been as follows:

Years.	Acres planted.	Aggregate bushels.	Av. bushels per acre.
1858	25,890	676,479	26.1
1859	29,140	799,087	30.8
1860	30,443	1,220,747	41.8
1861	27,330	1,051,588	38.
1862	25,969	786,481	30.2
1863	25,559	700,911	27.4
1864	21,960	695,997	32.1
1865	22,134	877,731	39.6
1866	25,006	972,663	38.8
1867	23,475	882,386	37.5

The average yield from 1850 to 1867 inclusive, a term of eighteen years, is 34.6 bushels per acre, which is more than an average for the State, and slightly above the average per acre of the most favored corn districts in the State.

It will be seen by a table published in the State Agricultural Report for 1866 (page 340), that the average yield of corn per acre in the fifteen counties classified as Miami Valley, for a period of fifteen years, from 1850 to 1864 inclusive, was 33.4 bushels per acre; for the fifteen counties of the Scioto Valley for same period, 33.9; and the average for the entire State was 31.3 bushels per acre.

The following is a recapitulation of the State's production of corn for fifteen years, by districts, as classified in the table alluded to above:

	Bushels per acre.
Miami Valley, 15 counties	33.4
Scioto Valley, 15 counties	33.9
Western Reserve, 12 counties	23.7
Hocking Valley, 8 counties	31.3
River Counties, 4 counties	30.5
Muskingum Valley, 16 counties	30.4
Maumee Valley, 18 counties	26.6
Entire State for same period	31.3
Belmont county for 15 years	34.2
" " " 18 "	34.6

The annual area of lands cultivated in corn in the county is about 27,000 acres, and is not increasing at present. The mode of culture is to break up grass lands in the early spring or winter, so that they will be exposed to the action of frost before planting time. Two purposes are subserved in this process. Hard freezing after plowing kills many of the insects, and puts the land in good friable condition for cultivation. Stalk grounds, or lands without grass, may be plowed immediately before planting, as it gives the corn a chance to get at least a fair start with the weeds.

The time of planting, with our best farmers, is from the 1st to the 10th of May, but this is varied somewhat by the seasons. The double shovel is in pretty general use in cultivation. Some use a cultivator, and plow the last time with single shovel, so as to reach a greater depth.

Corn ground of all kinds should be effectually harrowed and cross-harrowed before planting, and when cloddy, may be improved by rolling, but this latter is seldom done. The ground is marked off with shovel plow, from three and a half to four feet in width, and cross-marked same width, and planted by hand, with three or four grains of corn to the hill. Most farmers aim to plow their corn about four times, and do but little hoeing, except the first or second time going through, and then only to level up and cover the small weeds in the hill. It is getting to be the custom to cut up most of the corn for the increased amount of fodder which it affords.

OATS.

About 16,000 acres are annually cultivated in oats, with an average yield of about 25 bushels to the acre, or an aggregate of 400,000 bushels. Belmont is one of the first class counties of the State for oats, and though our average is not high, many of our lands produce in ordinary seasons, with proper cultivation, 40 bushels to the acre. Oats should be sowed as soon after the first of March as they can be got in the ground in good order. Early sowing makes the surest crop, and the straw stands up better, which is an important consideration, as it very much increases the labor and cost to harvest and secure lodged oats. No particular variety is in general use. The Poland or side oats are in considerable favor. The celebrated Norway has not been introduced yet.

Rye is not much cultivated in the county of late years, the area varying in amount from one thousand to two thousand acres annually, with an average production of nine to ten bushels per acre. We have but few distilleries in the county, and neither corn nor rye are raised for distillation.

Barley is raised in some parts of the county, but is not a general crop. About 2,300 acres is the average annual area of this product for the last ten years, with an average yield of 18 to 20 bushels per acre. The spring varieties are most in use.

Buckwheat is regarded as one of the contingencies, and not as a regular crop. It is cultivated usually, except in small quantities, to supply occasional failures in other crops, and is considered at best "only a buckwheat crop." The average yield is 10 to 12 bushels per acre.

Potatoes are not largely raised in the county for transportation, but in all favorable seasons an abundance are raised for home consumption, with a fair supply for the neighboring markets. A limestone soil is not thought to be peculiarly favorable to the production of this esculent, but our sandy soils and bottom lands produce a fine quality and an abundant yield of potatoes. The returns show the annual yield to be about 85,000 or 90,000 bushels. This amount might be almost indefinitely increased. Nearly every variety in the country has been tried, more or less. The Mercer family, blue and white Neshannock, for quality, are unsurpassed, but the yield is only moderate. The Peachblow is considered a good potato, and yields well. The Pinkeye seems to have had its day; it rots badly. Buckeye and Early Goodrich are at present being cultivated for early use, but their merits have not been fully tested. The potato rot is becoming less prevalent than it was a few years since. This doubtless arises, to some extent, from the greater care taken in selecting proper ground for their culture, and more careful attention in cultivation. New lands, of any kind, are best adapted to the cultivation of potatoes; but when these cannot be obtained, select dry sandy, or gravelly lands of good quality, and plant early. Those for early use should be planted as soon in March as they can be put in, and others not later than the tenth of May. The first of May, or in April, would generally be better.

This theory of early planting will not hold good every year, as it may be varied by the seasons, but is believed to be substantially correct, and in accord with the experience, generally, of the last fifteen years. Early planting not only gives the tuber time to grow while there is a proper season, but time to mature before digging-time. Potatoes should be taken up and removed from the field to some dry, cool place before the rainy or cold weather sets in, in the fall. With this mode of treatment, a better yield is generally secured, with decidedly better quality, and greatly diminished liability to rot.

The potato crop is fast becoming a subject of great interest to the State, and, indeed, to the whole country; and should be carefully studied by the intelligent agriculturist. As a cheap article of food, but few crops are more important, and none perhaps capable of so great augmentation, with so small an investment of capital, skill or labor.

MEADOW LANDS.

The bottom lands of the Ohio river and principal streams of the county are well adapted to the cultivation of the grasses, and produce a large yield. The uplands are more varied, but with proper management produce a good average. The assessors' returns for 1867 show, under the head of meadow lands, an area of 25,676 acres, producing 35,470 tons of hay; and of clover, 2,982 acres, producing 2,800 tons hay and 2,226 bushels seed. This is an increase in the acreage of meadow and production of hay, within the last three years, of 25 per cent., and a decrease in clover of nearly 100 per cent.

Although other grasses are more or less used, timothy is the great staple for meadow; or timothy and clover mixed, which is believed by many to be equally as good, and for some purposes better.

The most approved mode of cultivation is to sow timothy seed in the fall, on lands seeded with wheat. The earlier this can be done the better for the timothy, as it gives it time to grow and acquire root during the fall sufficient to resist the freezing and thawing of winter and spring. Besides this, good seed put upon well-prepared ground in August or September, will nearly all grow. This is seldom the case in the spring of the year. The natural time for timothy seed to grow is when it would fall off from the stalk of its own accord, which is usually in August or September. Any very great departure from this supposed law of nature is generally attended with more or less loss of seed and time, and not unfrequently with total failure.

When timothy seed alone is sowed, six quarts to the acre is about an average of what is used. Fresh new lands take less seed than old lands, except where the latter is well manured and put in good order by thorough harrowing and rolling.

For timothy and clover mixed, sow 4 quarts timothy seed in fall, and 4 quarts clover in the spring, from 15th of March to 15th of April. A less amount of seed would do, but the difference in cost is more than made up the first fall after the wheat is harvested, in increased pasturage. The first crop to be mowed will also be heavier, the undergrowth being more dense, the yield will not only be greater but the quality better. After two mowings clover will mostly disappear, and be replaced by timothy.

The time for cutting timothy is still a controverted question. While some gentlemen, of high attainments in agriculture, hold that "*experience*, the only safe instructor in agriculture, has demonstrated that the proper time to cut all our grasses is when they *are in flower*," many doubt the correctness of these conclusions, and pursue a different policy, on the theory that timothy, like most other things, is the better of being ripe. Not when it has commenced to decay, nor even when the stalk has commenced to bleach in the field, but as soon as the blossom has fallen off. At that time, if cut, most of the seed will ripen and the yield will be much greater. Because, first, the stalk has had its natural time to mature, and has borne its seed; and secondly, a week or ten days are added to the time for undergrowth, which increases more rapidly at that period than any other during the season. The quality is also believed to be improved. Timothy, like all other grasses, is charged highly with a glutinous substance, composed of starch, sugar, oil, &c., and containing an accumulation of what chemists call *proteine*. This vegetable product, whether secured in hay or grain, is held to be the most nutritious part of the food given to animals, and is believed to have reached its greatest accumulation in the stalk of timothy about the time the seed commences to ripen.

Any person who may have mowed timothy all day, when in full bloom, *not ripe*, will recollect that there was little, if any, accumulation of this gum, or gluten, on his scythe. After the flower falls, his experience is entirely different: a heavy coat of this gluten will immediately form on his scythe, which indicates the presence of the greatest amount of this most indispensable nutriment. That this theory has been fully established by chemical analysis, is not claimed, but it has certainly not been disproved by agricultural experience. It will be admitted that there is more danger of letting timothy stand too long, than in cutting too early.

Clover is usually cut when about half the blossoms have commenced to dry; and the same course is generally pursued with clover and timothy mixed. Meadows are mostly cut with mowing machines, and raked up by horse-power, and the hay hauled to the barn or stack, and taken up by horse-power. The larger part of our hay is put into barns, with which most of our farmers are pretty well supplied. A considerable amount, however, is stacked out at such points as are most convenient for feeding. It is a custom with many to salt the hay as it is mowed away. This is considered beneficial on two accounts. It preserves the hay when not thoroughly cured out, and it is eaten up cleaner and with better relish by horses, cattle or sheep.

Meadows are generally pastured in the fall—frequently not till late in the fall or winter. A meadow permitted to grow after mowing until the first of December, makes fine winter pasture for sheep, and they always manage to get it in preference to hay, if even a considerable amount of snow is on the ground. Sheep are thought to rather improve than injure the meadow, but they should be taken off as soon as the grass begins to grow in the spring. Sheep should not be permitted to run on either timothy or clover meadow until the grass is entirely exhausted, as they will in that event help themselves to the roots of the grass, and thus seriously injure the prospect for the next crop. Cattle and horses should not be allowed to run on meadow lands when the ground is soft from rain, as they tramp it up, injure the sward, and leave the surface in bad condition. The same objection does not apply, to any great extent, to sheep.

Timothy should not be cut too low; this can easily be done, on a smooth surface. The proper place to cut it is above the first joint which appears above the bulb or enlargement on the stalk. If cut below this enlargement and close to the surface of the ground, many of the stalks die out, of a dry season, and the roots never vegetate. To this cause, and close pasturing, may be attributed the fact that many meadows "run out" in a few years, and the timothy is substituted by other grasses, or weeds.

PASTURE LANDS,

As stated above, were, in 1867, 81,433 acres, and increasing in area. These lands increase with the disposition everywhere apparent to increase the stock business. Some grass seeds are sown for pasture, mostly clover and timothy mixed, or red top, with occasionally orchard grass on woodland; but these, where the fields are pastured for six or seven years, usually run out, and are replaced with blue grass, which seems to have a natural right to the soil. Even our woodlands, when partially cut off, or the under-growth cleared out, will, without plowing, cover over in two or three years with blue grass. This is our best pasture, and most prolific, and is not liable to run out or exhaust itself as most other grasses are. White clover is another natural production of considerable amount of our lands, when not crowded out by blue grass, and is considered a better pasture for horses or cattle than red clover, but less prolific, and not certain to appear at all only in favorable seasons.

When the pasture dies out, or becomes thin, or a covering of moss appears on the surface, as is sometimes the case, the best remedy is to plow up and plant in corn, or sow in wheat; as in that case, with no blue grass to interfere, it would be regarded as a sure crop for wheat, when grass seed could be again applied.

FERTILIZERS

Are not applied to any great extent to our pasture fields. We have not the barn-yard manure to do this, and but little is used for such lands, except when they are plowed up for cultivation. Neither gypsum nor plaster of Paris has been used here as a fertilizer, except as experiments on a very limited scale, and the results are not well known. Our old Pennsylvania farmers who settled in the county at an early day, and who constituted a large element of our very best farming population, came to the county with a prejudice, whether well founded or not, against the use of plaster of Paris as a fertilizer. They claimed that it rapidly exhausted the soil, without producing compensating benefits. Their views in this regard were very generally adopted, and have been the controlling sentiment ever since.

Barn-yard manures are carefully saved by our better class of farmers, and hauled out to the fields which seem most to need them. There is no regular system for doing this, and the time is varied frequently to suit the convenience or force of the farmer. He tries to clear it up once or twice during the year—hauling in the winter or spring to the ground intended for oats and wheat. If that is not accomplished in the spring, as sometimes happens, he will haul out the balance immediately after harvest upon his oats stubble, and plow it under for wheat. This is usually attended with good results to the first crop, and is plainly visible in the crops for several years afterwards. Sometimes the manure is first put on the ground intended for corn, but not generally with as good results the first year. Of a dry season the manure is of but little account, and of a wet one the grass seeds and weeds introduced in the manure become troublesome and frequently injure the corn.

Many persons are not as careful as they should be in saving and applying the manures which accumulate on their premises. This arises sometimes from carelessness or lack of knowledge, but most generally out of a disposition to make the greatest possible number of dollars and cents out of the present hour, leaving the next hour, with its blessings and evils, to be enjoyed or endured by him who may live to see it. It is very evident, however, that with the most scrupulous saving of barn-yard manure, that a farm will not produce enough to manure itself properly. One-half the land of an ordinary sized farm usually gets none. The produce of the whole goes to keep up the thinner parts, and that portion of the farm which produces most heavily receives no return from the barn-yard. It may not need any for the time being, but that cannot always last under continual cultivation. The aggregate of barn-yard manures cannot be much increased, except on farms located near towns and cities, which are but few. Then resort must, finally, be made to other manures, or a different mode of tillage.

In this county we haye an inexhaustible amount of limestone, well distributed over the county, with coal and wood everywhere to burn it into lime. A compost of lime, and such other ingredients as are no doubt at hand in sufficient quantities, and which science and experience will eventually point out, will, doubtless, in due time, be brought into requisition. The application of lime as a fertilizer has not in any form been generally practiced in the county, but in some instances it has with good results. Some of our lands do not need it, being already heavily charged with lime. The greater portion of the eastern and middle townships are of this character; also the northern and southern row of townships. But Warren, Goshen and Union have much sandy and clay soil. Some of this kind of land is found in several of the other townships, with comparatively little lime. All of these lands would doubtless be greatly improved by a proper system of liming, and the lime could be applied cheaply.

One instance of liming occurred within the observation of the writer, several years since, with the following results, so far as recollected: About forty bushels of partially exhausted lime, equal to, say, twenty-five bushels of good lime, was put on one acre of the poorest land in a ten acre field the first of June. The land was clay, with subsoil of clay and shelly sandstone, and believed to contain but little lime. The lime was spread evenly over the ground, and the field plowed up in June, as fallow ground.

It was plowed again, or stirred, in September, and sowed in wheat, harrowed in. In the spring the field was sowed with clover seed.

The result was the acre limed ripened several days earlier than the balance of the field, and produced fifty per cent. more of grain to the acre, and the clover produced one hundred per cent. more than an average of the field. Number of bushels to the acre not at present recollected, but a good strong crop was produced.

Red clover, stimulated by lime, can most certainly be made one of the best and cheapest fertilizers for a great portion of our lands. Yet plowing clover under, as a fertilizer, has not been much practiced in the county. Indeed the amount of clover raised in the county is too small, and the acreage, from the assessors' returns, seem to be diminishing.

TOBACCO

Has been raised in the south half of Belmont county in considerable quantities for the last forty years. Its production is gradually diminishing, and is at present confined mostly to the townships of Warren, Somerset, Wayne, Goshen and Washington. The production has ranged from one and a half million to three million pounds annually, and has been the source of considerable profit to that portion of the county. The production of 1867 was 1,034,543 pounds. The crop of this county has generally been grown on new lands, just cleared, when two or three successive crops would frequently be raised. The average yield from new lands is about 800 pounds, and from old, manured lands 1200 pounds per acre.

The new land tobacco is mostly cured by fire, in air-tight houses, built for the purpose, of logs taken from the ground where the tobacco is grown. The fire is applied by means of a stone flue or furnace, built for the purpose, with mouth extending to the outside of the building, to receive the wood. The old Maryland style of curing by open fires has not been followed for many years.

New ground tobacco is generally stripped off the growing stalk in the field, and is taken as it ripens, the under leaves first. These are strung with thread or twine, and placed on a stick four feet long preparatory to hanging in the house. When the house is thus filled, a moderate fire is applied until the leaves change their color to a greenish yellow, when the fire is increased, and the tobacco thoroughly cured out. With ripe tobacco, and a little skill and pains in management, a fine article of yellow, or yellow spangled tobacco is thus made, which usually commands the highest price in market. Red and brown colors are made by a slow process of firing, or by being cured in the open air. The tobacco is usually sold here to country merchants, either in the leaf, or after it is handed up. The purchaser again hangs it up in his packing or drying-house, to be "qualified" or dried out again by the air, preparatory to packing. It is then packed into hogsheads, of 800 or 900 lbs. each, and shipped, generally to Baltimore, for sale, at which place they have extensive State warehouses for the inspection and storage of tobacco. Nearly all the tobacco grown in this part of Ohio finds its ultimate market in Europe. The price has been quite fluctuating, varying here at home, for the past ten years, from $5 to $12 per 100 lbs.

Tobacco has been thought to be exhausting to the soil, and probably is, where long continued on the same land; but one or two crops on new land, which has been the general custom here, seems to have done no injury, as wheat or corn, following tobacco thus cultivated, is regarded as a sure crop.

FLAX

Is no longer raised in the county—that is, we think so. The assessors' returns for 1867 show, however, that 11½ acres are yet cultivated in this useful article. If this be correct, which may be the case, we have a greater acreage in flax than either Coshocton or Jefferson, and more than Lorain, Ottawa or Sandusky. We are content, therefore, to rest upon our laurels. But then there is no disguising the fact—the good old days of spinning-wheels are gone! Absolutely gone!

SORGHUM.

Has been cultivated since 1860 in considerable quantities in the county. Belmont has held first rank in the State in the cultivation of this article, until 1867. The production is now slightly decreasing. Only a portion of our lands are well adapted to its cultivation. Limestone lands, although productive, do not produce a fine quality of syrup. Our sandy soils in the vicinity of Barnesville produce an article of syrup that cannot be excelled in the State. No process of rectifying has yet been introduced into the county which has proved successful. The general continuance of this branch of business will depend upon successful experiments in rectifying, to be hereafter introduced. The average production of sorghum in the county has been about 85,000 gallons of syrup, and 700 to 800 lbs. sugar; incidental.

MAPLE SUGAR.

The production from the sugar tree or maple has been gradually diminishing. The assessors' returns for 1862, '63 and 64, show that the average annual production of sugar is 16,356 lbs., and of syrup, 5,073 gallons. This average is being annually diminished. The lands covered with sugar tree and maple are being cleared off and appropriated to other uses.

ORCHARDS.

Belmont county is well adapted to the cultivation of the fruits, and nearly every farm has its apple-orchard of grafted trees. The apple is considered the most important among the fruits, and is the more universally cultivated. Apples and peaches both do best on our high lands. They are a surer crop, and thought to be of better quality; but many apples are raised on the bottom lands to good advantage. We have all the standard varieties common to this latitude. An abundance of apples are raised every year for home consumption, and in favorable seasons, a large surplus for transportation, which usually find a ready market, at paying prices.

According to the assessors' books for 1867, we had 5,514 acres in orchards. But this does not show very conclusively the full acreage in orchards. Many persons have fruit trees about their houses, lots, and along the fences, that are not reported to the assessor.

Peach trees are not as plenty as they should be. This arises partly out of the fact that, of late years, the tree is of short duration, generally living but five or six years after it commences to bear fruit, and replanting is neglected. It is thought by many that this premature decay of the tree is occasioned by a worm which works in the roots and bark of the tree, as they do in all other decayed trees; and that this is the primary cause of decline. While others hold, and which seems to be the more rational theory, that the decline in the tree is a prior work, and that the attack of the borer follows as a consequence, just as it does with all other trees in the woods in a declining state, and that they only hasten the death of the tree, after it has commenced to die. Certain it is that no remedy has yet been found to preserve and perpetuate the life of the peach tree much beyond its present allotted time to live.

To keep up a good supply of vigorous, healthy-bearing peach trees, a fresh lot of trees should be planted out every five years. This can be done with but little trouble, and at small cost, compared with the importance of having a good peach orchard. Any person, with even moderate skill, can raise his own trees from the seed, and bud them himself. If he does not wish to tax his ingenuity or leisure in this way, the trees can always be procured at a reasonable rate from the nurseries. Peach trees take but little room in an orchard; they may be planted fifteen feet apart, and are the better of having the ground cultivated while they are growing. A sufficient number of trees to supply a family with this most delicious fruit, may be planted in fence corners and about the lots, where they will take up no land, scarcely, that would be used for anything else. The peach tree is not certain, in this locality, to bear every year, but usually bears a full crop every alternate year.

Pears are cultivated to a limited extent by most of our best farmers, and they seem to do well on our uplands especially, but the supply of bearing trees is not near equal to the demand.

Cherries are largely cultivated, and are considered a sure crop. We have many fine varieties. They do not succeed well on our bottom lands, but the uplands can hardly be excelled for the production of this kind of fruit.

NURSERIES.

We have some half dozen very fine nurseries in the county, which are well prepared to supply any reasonable demand for the various kinds of fruit trees, vines and shrubbery. They have, in addition to supplying the local demand, furnished a large amount of trees for transportation West and South.

Grapes have been cultivated to some extent in the county, but have until recently been confined to small lots. They were first introduced for wine-making purposes, in the south part of York and Washington townships, twenty-five or thirty years ago, by a population of Swiss emigrants that settled there about that time, and who now own nearly all the land in their locality, and are not disposed to go out of their own settlement, except to adjacent lands. They own small tracts of land generally, and each landholder has a small vineyard. The lands are generally rough and hilly, but seem well adapted to the culture of the grape. These people scarcely ever miss having a fair supply of grapes, and usually furnish a considerable quantity of the native wine for transportation.

Their mode of preparing the ground has mostly been to spade or dig up the entire lot to a depth of two or three feet, preparatory to planting out the sets; and they seldom, if ever, fail to have a healthy, vigorous growth of vines, with a corresponding yield of grapes. This Swiss population, it is said, all drink wine, yet they have the reputation of being a remarkably temperate, quiet, industrious people.

Of late years the cultivation of the grape has extended more or less all over the county, but the largest vineyards are along or near the Ohio river. Some of these have been quite successful, others not uniformly so—varied, probably, by the particular location or mode of treatment. The lands along the river, as well as those of the Swiss settlements in York and Washington townships, have mostly a limestone soil, but more mixed with sand in the latter. Some of the very finest specimens of the grape coming under our notice during the last season, were raised by Mr. Kelion Hager, of Barnesville—a locality where the soil is generally sandy, and contains but little lime.

The Isabella and Catawba are the kinds most in use, but the Concord, Iona, Delaware and other varieties have of late years been introduced. The reports for 1867 show that there are in the county 154 acres in vineyards, producing 196,244 pounds of grapes, and 11,424 gallons of wine.

SMALL FRUITS AND GARDENING.

Besides what is done at raising small fruits and vegetables all over the county, to supply the local demand, there is quite a considerable business done by professed gardeners along the Ohio river, and on some of the creek bottoms, for the purpose of supplying the Wheeling market and that of other towns along the river and railroads. We have no statistics to indicate the extent of this branch of business—small fruits and garden vegetables; but quite a number of our enterprising citizens have done a large and successful business in this line, and the demand for these indispensable products of the soil is rapidly increasing.

HOPS.

A considerable amount of hops was raised in the county from an early day until within the past few years. The business was principally confined to Richland, Pultney and Mead townships, where it was prosecuted with decided success by quite a number of our farmers for many years.

The mode of culture was to select the best piece of ground to be procured, either bottom land or well manured upland, and plow it up deep—sub-soiling would have been better—harrow thoroughly, and mark it off with plow, and cross mark for the hills ten feet apart. Many dug up the earth for the hills to a depth ot two feet, and mixed well rotted manure in the hills, which proved to be beneficial. The sets or roots were then planted, usually three to the hill. This was done either in the fall or as soon in the spring as the ground was in order to work. If done in the fall, the hill was usually covered over with manure, which was removed early in the spring. The sets were placed in the hill in a leaning posture, and covered from three to six inches deep, having the sprout end up and nearly at the surface of the ground. The first year will not make a crop, but each hill should have a small pole, size of a bean pole will do, and the sprouts as they come up be tied to it with woolen thread. This method will produce some hops the first year, and will give the hill strength for a full crop the second year. The lot may be cultivated in something else the first year—potatoes, or something that will not shade the hops. The lot should be plowed and kept clear of weeds.

The second year they are poled—three poles to each hill. This is usually done before corn planting time, and the vines carefully tied to the poles as soon as they are long enough to tie up—three vines to the pole. Two vines would do about as well where they meet with no mishap, and both go out to the top of the pole. The poles used are 25 to 30 feet in length, and are usually cut in the fall and winter to secure the greater durability, and hauled to the place and sharped at the end, ready for setting in the ground at the proper time. Holes are made in the ground for the admission of the poles by means of an iron instrument, made for the purpose, weighing fifteen or twenty pounds, called by the Pennsylvania Germans a "Lawxtrum." The poles are generally put in the ground from twenty inches to two feet, and leaned a little from each other at the top, in the same hill, to give the vines room to spread out and get the sun properly, and not be matted together. The ground is plowed regularly and kept clean. The sprouts or vines that are not tied to the poles, after the second year, are trimmed off clean with a knife or hoe and removed, and the hills kept clear of everything but the vines attached to the poles. About the first of September the hops are usually matured and picking commences. They are picked from the vines, generally, by females, with a male attendant to take the poles down and place them in a convenient form over the box which is to hold the hops when picked. These boxes, which contain enough to make about 25 pounds of cured hops, are constructed with handles to the sides like a hand-barrow, so that they can be moved conveniently by two men, and carried into the dry-house.

The dry-houses are usually made of logs, and cracks plastered tight with clay mortar, and have one tier or set of joists across the building about four feet above the heating apparatus; some have two sets of joists, one above the other, for two drying places. Across these joists are nailed strong lath, two inches apart, and on these are spread coarse open linen, manufactured for the purpose, and the hops placed on it for drying. The heat is applied by means of one or more furnaces constructed of stone and made tight, with a flue to carry off the smoke. The hops, when cured, are shoved off into an adjoining building, or into boxes, and conveyed to a more secure place. The price of hops for the last fifty years has been very fluctuating, varying from 12½ to 50 cents per pound. But, upon the whole, the cultivation of hops has been considered a good paying business. Poles have become scarce, and the business is at present very much neglected.

SUB-SOILING.

Sub-soil plowing has been but little practiced in the county, but has been experimented on by a few of our farmers in a limited way, with satisfactory results, so far as reports can be obtained. This kind of plowing has mostly been done in the spring of the year. One furrow is plowed eight or ten inches in depth in the usual way, when the sub-soil plow follows in same furrow, plowing from eight to ten inches deeper, breaking up or loosening the sub soil and leaving it in the furrow. This takes two teams, as will be observed, and makes the work of the front team heavier than if only single plowing was being done, as the furrow horse has to walk on the loose sub-soiled ground, which nearly fills the furrow.

A field thus broken up to the depth of sixteen to twenty inches is in much better condition to stand the effects of either a very wet summer or a very dry one. If the season be too wet the surplus water passes off more rapidly from the roots of the growing crop, and does it comparatively little injury; and of a dry season, which occur the more frequently in this county, the greater depth of loose earth retains the moisture much longer and yields it up to the roots of the growing plant as nature seems to demand it. Experiments have thus been made on fields for grain, and small lots for vineyards, which, it is claimed, have retained the loose sub-soil for years, and a consequent moisture during cultivation that was not common to adjoining fields differently treated.

Clay lands, and others having a close, hard sub-soil, are no doubt greatly improved by this mode of tillage, and their durability proportionately increased; but sandy lands, or any kind of land with a gravelly or porous sub-soil, would hardly be benefitted by this extra deep plowing, and might in some cases be injured. The cost of tillage is considerably increased by sub-soiling, that is the breaking up part, and this mode of tillage should only be resorted to after careful experiments testing the particular kinds of soil and sub-soil most likely to be benefitted by the operation.

Deep, single plowing on all classes of lands is considered, in the main, good policy, but is not always attended with immediate good results. When the soil is thin, say five or six inches, and the sub-soil poor and barren, to throw up to the surface four or five inches of this sterile sub-soil will affect unfavorably the first and second crops, and may not be beneficial for several years; but it will ultimately prove beneficial. All lands for cultivation should have a soil not less than ten inches in depth. This depth is required to give room for the roots of plants and to secure the necessary moisture in hot dry weather. Of course deep plowing will not make all lands rich, but it will tend greatly to prevent deterioration, and at the same time communicate more bountifully to the growing crop.

The Michigan double plow has been used by a few persons only in the county, and the results not reported, but thought to be unfavorable.

The steel plow which has been in use for common plowing for a number of years is fast gaining favor. The first mold-boards which were made for the steel plow were so awkwardly, if not wickedly constructed, that it took from 40 to 50 per cent. more horse power to propel one of these plows than it should have done. This was a great drawback to both their introduction and usefulness. They had the merit of having a steel mold-board, which was an important one, but that was their only merit. They had the reputation of being a heavy running, clumsy plow. The mold-board was too short for the breadth of furrow, and consequently met with greater resistance than would otherwise have been necessary. This objection has, to a great extent, been obviated in many places in the manufacture of plows, but not everywhere. A mold-board should be made of sufficient length to admit of a proper inflexed curvature, sufficient to do its work thoroughly, and with the least possible resistance from the ground being turned over. Great pains should be taken in the selection of a plow to get one that will not only do its work thoroughly, but do it with the greatest amount of ease to both plowman and team. To purchase an awkward, heavy running, horse-killing plow, at this late day, should properly subject the purchaser to the penalty provided by the statute to prevent cruelty to brutes.

DRAINAGE.

As previously more than intimated in this communication, Belmont county is naturally well drained, yet there are still some lands which could be greatly improved by draining. Some underdraining has been done in the county, but no regular system has prevailed. We have no establishment in the county for the manufacture of tile, nor is it known that any have been used in the county for drainage purposes. The customary plan adopted has been to cut a ditch sufficiently wide to prevent its filling up easily, and leave it open. This answers very well where the ditch will not be in the way of cultivating the field. Some have made underdrains by cutting the ditch to a sufficient depth and filling up the bottom, say 15 or 18 inches with broken stone, and covering these with flat stone, or, where flat stone are not convenient, with straw, and filling up the remainder with earth. These drains are said to answer the purpose, and last very well. But our experience in underdraining is not sufficient to give reliable results.

CATTLE.

The number of cattle in this county has been slightly diminished since the commencement of the war. The assessors' reports show the number for 1868 to be 20,154, valued at $525,875. Many cattle are driven into the county, and pastured and fed through the summer and winter for market, that do not get on the tax duplicate. This traffic is a source of considerable profit to the county. We have some fine specimens of the Shorthorn stock in the county, but it does not prevail to any considerable extent. About one-half our cattle are grade Durhams, with a few Devons; the balance are of the common stock.

Why this apathy has existed so long among our farmers in this part of the State, on the subject of improving their breeds of cattle, is not easily accounted for. Where the Shorthorns have been introduced, or even crossed with our common stock, it has been attended with the very best results; and many of our farmers are now giving the subject due attention. A county situated as Belmont is, with a rich, uneven surface, and a growing indisposition to much plowing, cannot longer afford to overlook so great an interest.

BUTTER AND CHEESE.

No regular dairy business is done in the county, and the butter and cheese made are for home consumption and to supply the neighboring villages and city of Wheeling. The assessors' returns show an average annual production of about 530,000 pounds of butter and 15,000 pounds of cheese.

HORSES.

The stock of horses in the county for a number of years before the war averaged about 11,500 head. Toward the close of the war the number was diminished about ten per cent., and the average tax valuation increased sixty per cent. The number is again on the increase, and will soon reach its highest maximum. The assessors' returns for 1868 show the number of horses at present to be 10,820, with an assessed value of $889,422. This is just one thousand less than we had in 1862, but is an increase of nearly seven hundred over 1866.

We have a good stock of horses in the county, generally for farming purposes, and have had occasionally some very fine blooded stock, such as Arabian, Morgan, Consul, Pilot, Eclipse, Flying Hiatoga, and, more recently, Invincible and Kansas. Our horses are more or less mixed with these varieties, which has doubtless added greatly to their worth. But there has never been any general disposition among our farmers or teamsters to obtain the pure-blooded stock. The objection has been that such horses were too light for the farm, or even for horses of "all work." Many, however, are favorable to a cross with the best blooded horse that can be obtained, using heavy common mares for the purpose. This generally makes an excellent grade of horses for the farm. It combines action with weight and strength, which makes them very suitable for horses of "all work." The Hiatoga is rather a popular strain of horses, and has been pretty extensively patronized in the county. They are larger than most of blooded horses, and, when crossed with heavy mares, produce an excellent stock for saddle or harness.

Invincible and Kansas were brought into the county from Kentucky some thirteen years since by Rev. Joseph Woodroffe and Dr. J. Alexander, of St. Clairsville. These were considered as pure blooded horses as ever were in this part of the country. Invincible died a few years since, but Kansas is still owned by Dr. Alexander. There are many fine horses throughout the county from this stock, yet these horses have not been patronized in proportion to their merits by any means, nor is it likely this fact will be known and appreciated while there is any opportunity to be benefited by the knowledge.

The rage is for heavy horses. And this is not to be wondered at, for, as a general rule, heavy horses bring the most money. If a horse have any action at all, the question asked by the purchaser is, What is his weight? And he is sold virtually by weight for the Eastern market. There are exceptions, of course, to this rule. Many horses and mares are purchased for farming purposes and other light work for several of the

Eastern States. Light horses will do for this demand, but they are bought at correspondingly light prices. Another argument is, that our hilly surface requires heavy draft horses; that strength, in the selection of a horse, is more important than speed. In the propagation of horses for sale, these various ideas and facts control the intelligent agriculturist, and he aims at breeding such stock as will bring the largest returns for the labor and capital invested. And this, as at present understood, is in favor of heavy horses. A medium-sized horse, with a considerable infusion of pure blood, is popular on the farm and as a horse of "all work."

MULES

Have never been popular in the county, and are not propagated to any considerable extent. They are not in general use, but some demand exists for them along the Ohio river and other points for coal mining purposes, and that demand seems to be on the increase. The mule appears to be specially adapted to the coal mine, and they are preferred to horses for this branch of business. We had 222 mules in 1868, valued at $19,945, which is about equal to the average valuation of horses.

ASSES.—We have none, that we know of, except what may have been imported from other counties or Kentucky.

HOGS.

Although Belmont may not, in any sense, be considered a "hog county," it will average very fair with the State at large in the number and quality of its hogs. Almost every variety of breeds have been used, and pretty generally, in their turns, condemned for some real or imaginary deficiency. Twenty years ago the Short-haired Suffolk was in considerable favor. It was a small-boned hog, fattened easily, and matured young; but it never got large enough, and was difficult to propagate. A cross of the Suffolk with some of our common varieties made a better breed, and one which is to some extent kept up.

The Chester White has been pretty extensively introduced, and is giving very general satisfaction. But the most popular breed for the last eight or ten years in the county, is the *Long-haired Suffolk*. This breed, it is believed, was imported by Mr. James Ladd, of Jefferson county, and has been in this county for ten or twelve years. It is a hog that matures early under good treatment, and attains a large average size when fed out. The color is almost invariably white, even in the crosses with this stock. This variety has been taking the first premiums at our county fairs for several years. Messrs. John Porterfield and Selden George have been the leading representatives of this kind of stock in the county. It has been very strongly suspected by many that good feeding has considerable to do with the improvement of any breed of hogs that may be introduced. Most all breeds of hogs fatten better after they are a year old. Previous to that time they acquire flesh faster than they do fat. Hogs should not be kept over more than one winter, as the cost of feeding two winters absorbs the profit, and often results in the loss of at least part of the corn fed the second winter. A good field of red clover to turn hogs into during the summer previous to fattening, very much diminishes the cost of raising pork. Clover is cheaper than corn, and, while it is improving the land, will keep hogs in good growing condition without corn. They should be regularly salted, and occasionally given wood ashes mixed with the salt.

SHEEP.

The average annual number of sheep in the county for a period of seven years, from 1858 to 1864 inclusive, as shown by the annual reports, was 94,162, with an appraised value of $264,314. The number and value since that time has been largely on the increase, as will appear from the following table, made up from the assessors' reports:

	Number.	Value.
1865	143,648	$633,928 00
1866	165,776	618,110 00
1867	186,220	671,842 00
1868	209,393	598,526 00

The above table shows a steady increase of about 21,000 per annum. Belmont is now the fifth county in the State for sheep, in point of numbers, and the third in aggregate tax value.

Since the fall in the price of wool, some dissatisfaction has existed with our wool-growers, which will no doubt check the increase of sheep in the county, but it is not thought that it will materially diminish the present amount of stock. No panic has existed among our wool-growers, and but few sheep have been sold for hide and tallow prices, and these mostly such as would not have wintered over. The causes which produced the decline in wool are gradually being removed, and a healthy condition of the wool market, at no distant day, is confidently anticipated by our farmers and business men.

The adaptation of our lands to the production of sheep and wool growing, is a sufficient guarantee that the business will not be abandoned for temporary or insufficient causes.

Our flocks twenty or thirty years ago were mostly of the light-shearing varieties, but some of them very fine-wooled sheep. These were crossed with the best Saxony and Silesian Merinoes that could be obtained, which made a fine quality of wool, but produced a light fleece, and was on that account considered unprofitable—the finest flocks producing only from two and a fourth to three pounds, average, of wool washed on the sheep's back. Within the past fifteen years the heavy-wooled Spanish Merino have been extensively introduced, mostly from Vermont. We now have some very fine flocks of this variety in the county, and they seem to be increasing in popularity.

Our flocks are now generally crossed with the Spanish Merino. The first good result attained is in the increased weight of fleece, which is about fifty per cent. in one-half to three-quarter blood, with the wool in same condition. Second, it has increased the length of fiber, which is regarded as an improvement on our fine short-wooled Merinoes in former use. Although we have several flocks of as pure Spanish blood as the country affords, the general average in the county is probably less than three-fourths Spanish. Some object to any great infusion of the Spanish Merino into our breeds of sheep, on account of the increased amount of grease, or yelk, in the wool. This objection is not well supported by actual results; for when the Spanish wool is well washed, it is as free from grease as other varieties, and still produces the result above indicated.

No county in the State is probably better adapted to the sheep and wool business than Belmont; with a rich soil, and uneven and hilly surface, just the kind of lands suited to the inclination and production of sheep. Sheep usually seek the highest and dryest points within their inclosure for rest, and are not satisfied with a low, watery pasturage. They are in no sense whatever a water fowl, but when left to themselves seek the highest land they can find for their habitation. The foot-rot, which is a great annoyance to the sheep business in some localities, seldom troubles us here. The only sure prevention for foot-root is to keep the sheep on dry fields, where they will not be continually exposed to standing water during the wet seasons. In dry weather these flat, low fields can be pastured, of course, without detriment to the sheep.

MANAGEMENT OF SHEEP.

Flocks which are kept mostly for propagation, as some are in the county, are housed in rough, cold, or rainy weather, and are very strictly attended to, but this is not the case generally with other flocks. Some of the best wool-growers have stables and sheds to hold most of their sheep, and they are housed in stormy winter weather, but a large majority provide sheds only for yearling lambs, and such other weak lots as may be selected for the purpose. The stronger sheep are permitted to run out and take the weather as it comes. There is some difference of opinion as to the economy of this practice. It takes considerable of labor and capital to provide stabling for a large flock of sheep, and where this is done some actual beneficial results should follow to make it a paying investment, in a business point of view. Such results, it is claimed by very many successful wool-growers, do not generally follow; that good, healthy flocks of sheep, of two years old and upwards, will do as well out in the fields through the winter as in the shed or stables. Certain it is that the great majority practice this latter theory. The cost of raising sheep and producing wool is, certainly, one of the items that lies at the foundation of the whole business, and should receive due consideration. Whatever expenditure of labor or capital in constructing sheds or stabling for sheep is injurious or unnecessary should, of course, be abandoned. Sheep are, doubtless, the better of having some kind of a shelter or protection to resort to in case of a storm, but whether it would *pay* to make this protection general is the question under consideration.

Yearlings and two year olds are generally fed a little grain in addition to what hay they will eat, and the weak sheep, if any are found in the different lots, through the winter, are selected into a separate lot, where they can have shelter and extra care. The older and more vigorous flocks are usually permitted to run out, and are supplied with what hay they will eat, but not generally with grain, unless intended for market, as mutton or sheep. A common practice with many is to let their meadow lands grow up after harvest without pasturing until winter, also some of the regular pasture fields, and turn their sheep on these in December. Sheep do well on such pastures without grain, and eat but little hay during a winter of ordinary severity.

Care should be taken that sheep get water in the winter season while they are confined to dry food. This is often neglected, and nearly always with evil consequences.

The custom here is to wash the wool on the sheep's back. Preparatory to this operation the sheep are penned, and all the tags and dirt carefully removed, and their toes trimmed; after this process they are taken to some one of our clear, rapid-running streams, where they are penned and taken into the water, one at a time, and thoroughly washed. They are then put back into the pasturage until they have dried off and the yelk commences to rise in the wool, which usually takes about a week or ten days, depending somewhat upon the weather, when they are brought up and sheared. Sheep thus managed, though they be Spanish Merino, will produce a clean white article of wool, free from grease. The great difficulty about grease, or a superabundance of yelk in wool, is, that some people do not wash their sheep, but simply take them into the water so as to have it said that their sheep were washed; or, having washed them properly, permit them to run three or four weeks after washing before shearing, which is about equivalent to not washing at all. Sheep thus managed will, of course, produce greasy, heavy wool. But these are only exceptions, and the buyers are beginning to understand the causes of heavy wools, and will in due time doubtless apply the correction.

Within the last few years the Leicester has been introduced into the county. This was an importation from Canada by Mr. A. C. Danford, of Wayne township. Not more than 50 or 60 pure bloods of this variety are probably in the county. These Leicesters are at present being crossed with the Spanish and other varieties; but no results have as yet been obtained.

There are a few Cotswold and Southdowns also in the county. These mutton combing wool varieties have not been grown to a sufficient extent to afford reliable results.

FENCES AND TIMBER.

The common worm fence was used originally in this county almost exclusively. Timber was plenty everywhere, of the very best quality, out of which to make rails, and the rails were usually made on the ground which was in process of being cleared off, and on the spot where they could be laid up with little, if any, hauling. This made a good fence, and the cheapest one that could possibly be made in a new country, where timber was plenty and very much in the way, without any foreign demand for the surplus whatever. A large amount of most excellent timber had necessarily to be destroyed in clearing up the lands. These times have passed away with the things that were. Good timber lands, which are at all accessible, are now worth more than improved lands. It is fortunate, perhaps, to many of us that we had *hill-sides*, not at all inviting to the agriculturist. This fact has saved many a fine oak, which to-day stands as a proud monument to the wisdom and goodness of God to the children of men. The inclination was in us to destroy the timber, but the inducement was withheld.

We have a very fair supply of good timber yet in the county, well distributed, but our people begin to appreciate its value, and are more careful of its preservation.

The greater part of our fences are yet made of rails, on the "Old Virginia" style, worm fence, but perhaps a majority of our farmers are introducing and have commenced a more economical mode of fencing. Post and rails, board fence, and pailings are variously being used, and one-fourth of our fences are probably now of these kinds. The board or pailing fence is thought to be the most economical, and equally as good as any other. Boards can be sawed cheaply in these days of portable saw-mills, out of timber that will not split into rails, and a considerable quantity of this class of timber is now being made into fencing boards. Some use the lower part of the tree for pailings, when it will split, and the upper part for boards. This is found to be a great saving of timber, as it will require but little more than one-third of the timber, including posts, to make a board or pailing fence, that it does to make a rail fence, and it takes up less ground. A large portion of the county is pretty well supplied with black locust for posts. The honey locust, which abounds more or less along our streams, is good for nothing for this purpose. The writer has had painful experience on this subject. The posts rot off in a few years at the top of the ground. The black locust, if it have age and is sound, will last in the ground from thirty to fifty years.

Some of our farmers are taking pains to cultivate the locust for posts, and many of them are not recklessly destroying the young trees as they appear along our hill-sides and waste places, as was formerly the custom with too many. The locust is easily propagated, and might be grown to any desirable extent on what we term our waste lands, or such lands as are too steep for tillage, and without any perceivable detriment to such lands for grazing purposes. This is a subject which demands more attention than it has yet received. The locust might be grown to advantage all over the State, but especially so in the counties bordering on the Ohio river, where there is much rich land, too steep for profitable cultivation, and exactly adapted to the rapid growth of this kind of timber. We are beginning to realize the importance of this fact in Belmont county, and many locust groves may now be seen in our forests.

Timber for posts, or indeed for rails or boards, should be cut in the fall or winter. If cut in the spring, when the tree is full of sap, it is exposed to the depredations of worms, and will always be less durable. Boards for fencing purposes are usually sawed from five to seven inches in width, and fourteen to sixteen feet long, and two posts are used to the pannel. A narrower width for the boards would probably be better, as the fence would be lighter and less exposed to the wind. The posts should be put in the ground two and a half feet to secure permanence. Many put them in only two feet, but nearly always with bad results. Such a fence will scarcely ever maintain its perpendicular posture against the wind for more than two years. A little extra pains and labor in putting up a fence properly, always pays a good interest on the investment.

Osage orange, for fencing purposes, has been experimented on a little by some of our citizens, but it is not known to have acquired any considerable reputation, so far, as a cheap, convenient or good fence; nor is it likely that it will recceive much attention until our necessities are greater than at present for the usual fencing materials.

ROADS.

We have the National pike passing through the county from east to west. It crosses the Ohio river at the city of Wheeling, over one of the finest suspension bridges in the country, and passes through St. Clairsville, the county seat, which is ten miles west of the Ohio river.

The Central Ohio Railroad also passes through the county, near its center, east and west, parallel with the National road, and about four and a half miles south of it. The eastern terminus of the Central road is at Bellaire, where it connects with the Baltimore & Ohio road; at which point they have in process of construction a railroad bridge across the Ohio river.

The C. & P. Railroad has its southern terminus at Bellaire, and passes along the Ohio river north from that point to Pittsburg and Cleveland.

Since the new pike law has gone into operation, we have constructed one macadamized road from the county seat to Warnock's station on the Central road, a distance of five miles; and four other roads of a similar character are in process of construction in different parts of the county, with quite a number of others in contemplation. Our people seem to be thoroughly stirred up at present to the importance of having good roads and bridges.

MANUFACTURES.

The Bellaire Nail Works is the pioneer enterprise of the kind in the county. It was burned down in one week after it started, but was rebuilt in two months, and has now been running six or eight months. Its present capacity is 60,000 kegs of nails per year, valued at $300,000. This requires 3,000 tons of pig iron, costing $120,000. Additional machinery is being put in, which will double the product of the works; and next year, with prosperous times, it will turn out half a million of dollars. The river side of our county offers so many natural advantages for such manufactures, that it is safe to predict that there will be several similar establishments built in the county within the next few years.

GLASS WORKS.—Bellaire turns out $150,000 worth of glassware per annum, and this, it is said, will be more than doubled during the current year of 1869. A planing establishment and steam flouring mill are also in operation here.

Bridgeport and Kirkwood have two planing mills, where they manufacture sash, doors and window blinds; and one establishment for the manufacture of agricultural implements; also an extensive foundry.

MARTIN'S FERRY.—At this town a large business has been done for many years in the manufacture of threshing machines and separators, cutting boxes, &c., &c. Some five different firms are engaged in this branch of business. There are also two foundries for mill and machine castings, engines, stoves, &c.; a blast furnace for the manufacture of pig iron, and a planing mill, sash, door and blind factory. Recently there have been established quite extensive glass works.

Martin's Ferry is one of the principal towns of the county, situate on the banks of the Ohio, and on the line of the C. & P. Railroad. It has long been the leading town of the county for manufactures. It is to be regretted that no estimate was obtained of the annual extent of its manufacturing business.

A woolen manufactory has been recently established at Powhatan, in York township. This is the first establishment of the kind, of any considerable dimensions, in the county. It is owned by Mr. Lewis Boger, who also has an extensive steam flouring mill.

Barnesville, a thriving town of Warren township, and located on the Central Ohio Railroad, has its manufactures of cast iron and hydraulic cement.

Our natural facilities for manufacturing, and the great importance of a proper division of labor, are only beginning to be appreciated by our people. The finest openings exist for successful investment in the various branches of domestic manufacture.

BUILDINGS.

The first farm buildings erected in the county, whether for dwellings or barns, were mostly of logs. It will not be necessary to give the *modus operandi* of constructing these places of habitation. The "log cabin" is quite familiar yet to most of the present generation, but the ancient custom of building with logs is nearly abandoned. Some of these log buildings still remain, and are quite comfortable tenements; but our farms are generally supplied with a different class of buildings. It is a rare case now to find a good farm that is not supplied with a reasonably good brick or frame house. Frame is the more common. Farm dwellings are usually two stories, built for convenience and comfort rather than ornamentation. Some prefer the cottage style, and of course gratify their inclination and taste in this particular.

We have some poor dwelling houses yet, but they are generally being replaced by better structures. There is beginning to be quite a laudable ambition manifested among our farmers to have not only comfortable dwelling houses, but out-houses to correspond, such as spring house, smoke house, wood and coal house, wash house, &c., &c. These appendages add greatly to the comfort and convenience of the homestead, and are in very general use.

Barns and stabling are considered indispensable on every farm, and but few farms are without them. Many of our Pennsylvania settlers—who, by the by, were esteemed as our very best class of farmers—considered it a high privilege, if not a religious duty, to build *a good barn* before they would erect a permanent dwelling. The barn, however, was only part of the programme, but it almost invariably came first. Many of these were bank barns, of capacious size.

Barns are not generally used, as in former days, for mowing away grain in; but the grain is stacked out, and the barn filled with hay, and grain after it is threshed. The introduction of threshing machines and separators has wrought this change. Grain, if well stacked, is considered better out than in the barn. It is a great deal easier to be gotten at with the machine, and is less exposed to injury from rats. But few farms, however, have stabling enough for all the stock, including sheep, and many would not use it for the latter purpose if they had.

School houses and church buildings are in fair supply; but old houses are being torn down, and new and greater ones erected in their stead. This denotes a healthy state of progress in both intellect and morals. Where the common school-room and churches are well patronized, we look for a community intelligent, virtuous and happy. Country life, where enjoyed up to its privileges and duties, is well adapted to a high state of mental and moral development. And where these advantages are properly secured, as in this country, alike to the rich and the poor, if appreciated, scarcely ever fail to bring their sure reward.

POPULATION.

The population of the county, according to the census of 1860, was 36,398. Although Pennsylvania furnished a larger share of our first settlers than any other State, Virginia, Maryland, New Jersey, New York and the New England States were all represented. The doctrines and habits of William Penn were early introduced into the county, and a good many Quakers, or Friends, are yet to be found in several of the townships. No people were, perhaps, more frugal and industrious, or better calculated to develop the material resources of the county. We have also a pretty fair proportion of foreign population, principally Irish and German.

The population of the county is not increasing, except in our towns. The foreign immigration at present is principally to the villages and along the lines of our railways. And indeed a growing disposition exists among our native population to get into the towns. This, taken in connection with the steady migration to the West of many of our substantial farmers, leaves the county all the time bare of properly skilled agriculturists.

Many imagine that it is not necessary to have skill, or experience, nor even much intelligence, to be a successful farmer; that any person, though he be fit for nothing else, will answer very well for a farmer. Farms are purchased and experiments made in farming with this view of the subject, which generally prove to be utter failures. Agriculture, like most other branches of business, has to be learned, to make it reasonably certain of success. And with successful agriculture, this is not the work of a day, nor of a year, but half a lifetime. The very idea of learning how to farm, is revolting to such as have not contracted habits of industry, perseverance and frugality. Labor, care and agricultural knowledge are all essential to successful farming; and with these, no business in the country is more certain of success.

PROFITS ON FARMING.

It is said that farming, even when well conducted, pays but a light per centage on the investment in real estate; that it seldom realizes more than three, four or five per cent. net profits. This is rather a bad showing, and not at all encouraging to the capitalist to invest in real estate; nor to the agriculturist to continue his business. But then the whole truth is not contained in the above estimate of profits. To make a correct exhibit of the aggregate net profits, we must take into consideration the advance or decline in the price of the lands used. In doing this it will be found that there has been a steady average advance in the price of farming lands throughout the State, for the last thirty years, of from six to ten per cent. per annum. This has certainly been the case in Belmont county. Add this per centage to the three, four or five per cent. current net profits of farming, and we have a very respectable profit on the original investment. And no investment, as a general rule, is quite so safe.

From three to five per cent. is about what lands will rent for, above keeping up repairs. But most of our lands are occupied, at least in part, by the owners themselves, who generally make them pay a better per centage, besides making a very comfortable, independent living, for the half of which they usually take no account whatever. City life, in this particular, is entirely different. There they pay for everything they consume, whether it cost anything to produce it or not; and this goes to swell the general expenditure of living, which has to be subtracted from the profits of business. It will not be denied that many city gentlemen, merchants, manufacturers, bankers and other business men, make fortunes, and a few of them rapidly. But in all candor, we might ask, is this the rule, or only the exception?

In a carefully prepared estimate, made several years since by an old merchant, and one of the shrewdest and most reliable business men of his day, it would seem that ninety-five per cent. of all who had engaged in merchandizing, for a long term of years, in a district embracing the greater part of the United States, had either failed absolutely, or retired from business with a capital more or less diminished. Why, then, may be asked, are there so many wealthy men in the cities? Mostly because of early investments in real estate, and later investments of a similar character. Some unquestionably have been successful in business. *These remain*, while the unsuccessful pass off, and their places are filled by the waiting and eager adventurer, perhaps from the country, without experience or commercial knowledge. He of course soon runs his race, and gives place to another. Such is city life, and city business, to the country adventurer.

But why should this comparison be dragged into a report or survey of this kind? What has it to do with agriculture? Very much to do with it. As remarked above, there is a manifest disposition among farmers, and especially farmers' sons, to get to the towns and cities. This tendency has checked the increase of population in most of the agricultural districts, and in some of them actually diminished it. "The harvest truly is great, but the laborers are few."

There is, of course, a motive in this great tendency to the villages and cities, where labor is not needed. Young men read of immense fortunes being made in the cities with but little effort, and forthwith make haste to get rich suddenly. There are great prizes, yet undrawn, held up to their view, mostly for the purpose of getting their money, when they are permitted to return with a diminished capital, to pursue a calling, under restricted circumstances, which they should never have abandoned.

The cities have their legitimate business, and their correct business men; but it is not these who are making any injurious draw on the agricultural districts. It is such as represent the *wonders* of the age: the Petroleum idea of getting rich suddenly; the invisible Insurance Companies; the paper Stock Exchanges, and the "All-healing Ointments;" the "World's Salve," and the "*Genuine* Old Jacob Townsend Sarsaparilla." Of course these are not meant literally, but are used to represent a state of society believed to exist, the evils of which, if understood, may be avoided.

But, then, farmers and mechanics say their calling is not considered as respectable as some other branches of business, or as the professions are, and, as a consequence, it is not the *way* to fame or popular distinction. Possibly not a sure way; neither is any other calling. Fame depends very much on individual effort and proper qualifications, both of which are within the reach of the mechanic and agriculturist equally with the professional or business man. A good education is quite as essential to the agriculturist as to any other class, and will, it is to be hoped, soon become as general. There are at present many intelligent, well-educated agriculturists and mechanics in the country. If their claims to fame or public distinction have been overlooked, whose fault is it? Surely they have, from their numbers, a controlling influence at the polls. It will not do to set up the plea, in this republican form of government, that the *minority* is oppressing the majority. If agriculturists were as generally educated as those occupying the professions, they would find no difficulty in protecting themselves, nor in vindicating the reputation of their calling; and our young men would not be repulsed, but invited to continue in a pursuit alike honorable to themselves and indispensable to the country.

AGRICULTURAL SOCIETIES.

For the past twenty years Belmont has had her county agricultural society, with commodious fair grounds, located at St. Clairsville, the county seat. The exhibitions at its annual fairs have usually been very good, and the interests of agriculture and the mechanic arts, upon the whole, greatly promoted by its agency. The society is, at present, decidedly vigorous, and promises long life and future usefulness.

At the village of *Belmont*, on the Central Ohio Railroad, in Goshen township, is located the Belmont Independent Agricultural Society. This society has very comfortable and convenient fair grounds, and has held its eighth annual fair. All of its exhibitions, it is believed, have been attended with success, and have given very general satisfaction. The society is out of debt and in healthy condition. It may now be regarded as one of the permanent *agricultural fixtures* of the county.

These societies have been of great advantage to the agricultural interests of the county, and were never in more healthy condition than at present.

The strictly agricultural pursuits of our people have somewhat changed within the last twenty years, but never were the great industrial interests of the county in a more prosperous condition. The wheat crop, it is true, has fallen off, which is greatly to be regretted; but the other grains and hay crop are fully up to their maximum standards, and the stock business is on the increase. With prosperous times and the usual industry and economy of our people, it is believed the agriculturist has as bright a future before him, as at any former period.

We have three National Banks in the county, all of which are doing a very fair business; but we have *no millionaire*, nor even any very rich people, in a Wall street sense of the term. But while we are compelled, reluctantly it may be, to admit this fact, we rejoice in the still greater one, that we have but few really poor people in the county. There is probably no county in the State, of anything like the age, population and general wealth of Belmont, where a more perfect state of equality exists among the people. Every one feels that he is as good as anybody else; and, as a general thing, he is. Equality, with that independence which usually results from moderate competency, seems to produce contentment; and contentment, with Godliness, or rather, "Godliness with contentment," the Apostle says, "is great gain."

What employment is so well calculated as agriculture to inspire reverence for a creative power, and to teach dependence on Him who sends the rains in their proper seasons, and tempers the winds to the condition of the shorn lamb?

The following report of a chemical analyses of soils, made at the Department of Agriculture at Washington, has been very kindly furnished by the Commissioner, Hon. Horace Capron. The samples were taken from localities fifteen to eighteen miles distant from each other, and are believed to represent pretty fairly the larger portion of our most productive lands:

DEPARTMENT OF AGRICULTURE,
WASHINGTON, D. C., June 23, 1869.

Isaac Welsh, Esq., Armstrong's Mills, Belmont county, O.:

SIR:—I enclose to you the report of the chemist of this Department upon the chemical examination of certain soils forwarded by you for that purpose.

Very respectfully, your obedient servant,
HORACE CAPRON,
Commissioner.

LABORATORY OF THE DEPARTMENT OF AGRICULTURE,
WASHINGTON, D. C., June 23, 1869.

Hon. Horace Capron, Commissioner:

SIR:—Six soils sent to the Department by Isaac Welsh, Esq., from Belmont county, Ohio, have been analyzed in this Laboratory, with the results which I now have the honor to report:

No. 1.	Surface soil, 18 inches deep........	Land of Isaac Welsh; bottom land, Captina creek.
No. 2.	Sub-soil........................	
No. 3.	Surface soil, 12 inches deep.......	County seat, St. Clairsville; upland.
No. 4.	Sub-soil........................	
No. 5.	Surface soil......................	Barnesville; upland.
No. 6.	Sub-soil........................	

These soils, as sent, were nearly uniform in texture and in degree of fineness. From their appearance alone, they might have been taken from one locality instead of three. The analyses were made with the view to determine approximately what might be the immediate richness, *i. e.*, what amount and variety of mineral elements they are capable of yielding to plants within a few years. The samples do not appear to have been sent as gathered; sifting, or some other mode of separating the associated rocks and vegetable debris, having possibly been resorted to. Each soil was contained in a small bag, and all were reduced to a fine dry powder. Thus but little reliable information regarding their original physical properties could be obtained.* They were thoroughly air-dried before the analyses were made. They are to be regarded, particularly No. 1, as soils of excellent constitution, and with proper cultivation, should prove highly productive.

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*The samples from St. Clairsville and Captina were taken from the ground about five months before the analyses were made, and were dried and sifted before sending off. The Barnesville samples were not prepared by sifting, but were sent off as taken from the ground, which was about four months prior to the analyses.

		No. 1.	*No.* 2.
Water		2.33	2.18
Organic matter		*5.73	3.72
Matters soluble in water	Lime	0 44	0 80
	Magnesia	0.047	0.50
	Iron (per salt)	0.002	0.005
	Sulphuric acid	0.53	1.03
	Phosphoric acid	0.001	trace.
	Chlorine of common salt	traces.	none.
Matters soluble in acid (dilute)	Peroxide of iron and alumina	10.96	11.73
	Lime	1.10	2.07
	Magnesia	0.07	0.87
	Phosphoric acid	0.005	0.01
	Sulphuric acid	0.87	1.00
	Alcalies	traces.	0.20
Silica, and earthy silicates		77.915	75.885
		100.000	100.000
(*Containing*0.93 soluble humus in acid form.)			
Specific gravity (air weight)		1.555	1.6168
Absorptive power, i. e., 100 lbs. retain of water at 70° F		54 lbs.	46½ lbs.
Reaction		*acid.*	*neutral.*

No. 1 is a dark, clayey loam, light pulverulent, and rich in organic forms.

		No. 3.	*No.* 4.
Water		2.26	2.06
Organic matter		*7.74	3.34
Matters soluble in water	Lime	0.54	0.65
	Magnesia	0.003	0.47
	Iron (as a per salt)	0.007	0.01
	Sulphuric acid	0.72	0.98
	Phosphoric acid	0.002	0.001
	Soluble chlorides, and alcalies	——	0.90
Matters soluble in dilute acid	Peroxide of iron and alumina	8.32	8.69
	Lime	1.01	2.66
	Magnesia	2.33	1.734
	Phosphoric acid	0.03	0.003
	Sulphuric acid	1.62	1.99
	Alcalies and chlorides	0.92	0.30
Silica and earthy silicates		74.498	76.212
		100.000	100.000
(* Soluble humus=0.79)		*No.* 3.	*No.* 4.
Specific gravity (air weighed)		1.4643	1.5962
Absorptive power, i. e., 100 lbs. retain of water at 70° F		60.5 lbs.	40.5 lbs.
Reaction		*acid.*	*faintly alcaline.*

Character of No. 3 same as No. 1, but lighter in color and more dense in structure.

		No. 5.	*No.* 6.
Water		1.83	2.22
Organic matter and carbonic acid		*6.57	4.40
Matters soluble in water	Lime	0.294	0.69
	Magnesia	0.015	0 023
	Iron	0.011	——
	Phosphoric acid	traces.	——
	Sulphuric acid	0.30	0.82
	Alcalies and chlorides	traces.	——
Matters soluble in dilute acid	Peroxide of iron and alumina	7.98	6.81
	Lime	0.61	2.14
	Magnesia	0.42	3.32
	Phosphoric acid	0.01	0 087
	Sulphuric acid	0.87	2.00
	Soda and Potassa	marked traces.	0.027
Silica (fine sand) and earthy silicates		81 09	77.463
		100.000	100.000

* This figure represents, also, abundant traces of acid humus.

	No. 5.	*No.* 6.
Specific gravity (air weight)	1.5411	1.6369
Absorptive power, i. e., lbs. of water retained by 100 lbs. of soil, at 70° F	50¼ lbs.	45¼ lbs.
Reaction	*strongly acid.*	*faintly acid*

No. 5 is a light colored, compact, clayey soil, more magnesian in appearance than No. 3.

Very respectfully,

THOMAS ANTISELL, M. D,

Chemist.

DAIRY HUSBANDRY.

BY ANSON BARTLETT.

There is, perhaps, no portion of the State of Ohio better adapted to dairy husbandry than that part commonly known as the Reserve, or more definitely the Connecticut Western Reserve, comprising some twelve or thirteen counties in the northeastern portion of the State. Nor is this region all equally well adapted to dairy farming, some portions being but poorly adapted to the production of grass, and at the same time well suited to the production of other crops. Dairy farming has been but little introduced, and generally found to be not as profitable as other branches of husbandry. This is particularly the case with the region bordering the shore of Lake Erie. This section embraces a portion of a belt from six to ten miles in width, extending from Cattaraugus creek, in the State of New York, to the west end of Lake Erie, of almost uniform geological characteristics, and comprising some of the finest fruit land of the Union, especially adapted to the production of grapes and other small fruits, and not as productive in grass as the country further inland. Consequently, it has never been used for grazing purposes, for the simple reason that it is not adapted to it. Indeed, the geological structure of a country seems to determine its adaptability to different branches of husbandry.

The underlying rock in the counties of Herkimer and Oneida, in the State of New York (than which there is no more justly celebrated dairy region in the known world), is what is known there as the Utica slate, and forms a portion of the Portage and Chemung group, the equivalents of which in Ohio are the Waverly sandstones and their accompanying shales. This rock in the vicinity of Utica, is a dark-colored and nearly black bituminous shale, the overlying drift being largely composed of its debris, intermixed with erratics of granitic and calcarous character.

This geological formation, the Waverly sand stones, are for the most part identical in character with the Utica slate; and consequently, all other things being equal, *should* produce nearly the same class of vegetation. This view is sustained by an examination of the primitive forest growth of the two sections, where we find the species and varieties of trees almost identical. Therefore, when we find the underlying rock to be the dark-colored carboniferous and bituminous shales and grits of the

Waverly series, and the superimposed drift composed of the debris of these rocks intermixed with that of older formations, and in varying proportions composing the soil, we are warranted in expecting to find a country well adapted to dairy husbandry, provided all other things are equal, with the celebrated Herkimer and Oneida district of New York, where this peculiar geological formation prevails.

In fact, if we trace this formation on the Reserve, we shall be struck with the coincidence that nearly all the dairying is confined to the region of country where this class of rock exhibits its outcrop. If we begin on the east, at the Pennsylvania line, we discover that nearly the whole of Ashtabula county, the northern part of Trumbull, the north-eastern, northern and western portion of Geauga, nearly all of Lake, the northern and western portions of Summit, nearly all of Cuyahoga, all of Lorain, all the western part of Medina, northern part of Ashland, and nearly all of Huron, are embraced in the geological formation spoken of; and, as the general direction of glacial drift throughout this region appears to have been from northwest to southeast, we find, as a matter of course, the soil of the south part of Geauga, Summit and Medina, together with all the northern and central portions of Portage, to be composed of nearly the same material, intermixed, to be sure, more or less, with the immediate underlying rock of each separate locality.

The lake shore region, before mentioned, seems to be a formation peculiar and by itself; for although the underlying rock is the same, the drift is entirely different, of a much later deposit, owing its present form and characteristics to the action of the waters of the lake, when occupying a higher level than at present; although that action must have been long subsequent to the glacial action which scooped out the bed of the lake, and transported the mighty mass of drift now to be seen to the southeast of the same, and which is evidently made up of the rock which once existed where the commerce of Lake Erie now floats in its pride. This lake drift consists, for the most part, of fine light sand or gravel, and is by no means as productive in grass as the more tenacious and heavy clay soils of the glacial drift further south.

Again, as we pass on toward the southeast, we view successively the outcrop of each superimposed formation of the carboniferous period, and gradually, almost imperceptibly, the drift assumes the distinctive characteristics of the underlying rock, until we reach the verge of the coal fields, where we find another region as poorly adapted to *grass* as the lake shore region, although of an entirely different geological character.

From the foregoing the reader will have no difficulty in discovering the position which I purpose to take in this matter, which is, that the dairy interest is almost entirely confined to the region of outcrop of the Waverly grits and shales, and the drift composed mainly of these rocks. I do not wish to be understood as claiming that *no other* region, or that *no other* geological formation is adapted to dairy husbandry. But what I say is this, that so far as experience goes, the most successful dairy regions are those which are situated on this peculiar and particular rock formation, and the soil of which is largely made up of this material.

In some portions of this region in Ohio these shales are of a decidedly saline character; in fact there are but few townships where this class of rock crops out; but what there are, are more or less saline springs, usually styled by the early pioneers "deer licks;" and even at some points at an early day, salt was made by evaporating the water of these springs.

The minerals contained in these rocks undoubtedly exert a powerful influence, not only on the productiveness of the soils of which they form a constituent part, but also upon the character of the vegetation as well, which is found growing upon them.

I have long been well satisfied that the geological formation and constituent elements of the soil played a very important part in the quality of milk, butter and cheese produced upon a given territory, and each succeeding year's experience confirms me more and more in that belief; and were I called upon to say what variety of soil I considered best for producing a superior quality of milk, I should, without hesitation, give the preference to a soil containing a large proportion of the decomposed shales of the Waverly grits; as, according to my experience, such a soil produces white clover in profusion, which I regard as the best variety of grass for producing a superior quality of milk.

I very much regret that we have no reliable analysis of these shales, but the merest tyro can easily determine that they abound with lime, potash, soda, sulphuric acid and chlorine; hence the different and various combinations of these elements are everywhere met with; and when we consider that these shales and grits everywhere contain immense quantities of organic remains, in fact in many places seem to be almost entirely composed of them, we no longer wonder that a soil composed of such materials should be rich and productive, and especially adapted to the growth of the best and most nutritious varieties of grass.

In support of the positions here advanced, we will proceed to inquire into the locality of successful dairying on the Reserve, and, to begin with, we find that we must leave out the entire Lake Shore region before mentioned, as throughout its whole extent, from Pennsylvania line to Sandusky, between the Lake and the clay bluffs south of the sand and gravel ridges, there is not as much dairying as in some single five mile square townships south of this belt. But all the southern part of Ashtabula, Lake, Cuyahoga, Lorain and Huron counties, the north part of Trumbull, Portage, Summit, Medina and Ashland, and the whole of Geauga, are found on the geological formation before described, and on just this territory, with scarcely an exception, do we find the dairies of the Western Reserve located.

There is a belt of land extending west from that here described to the western boundary of the State, over which a similar drift formation extends, that is undoubtedly as well adapted to dairy husbandry as the most favored portions of the Reserve; still we would not advise any to engage *largely* in the business until satisfied by actual experiment that success may reasonably be looked for, beyond the out-crop of the shales before described, for it is claimed by many very eminent cheese-makers, among which I will mention A. L. Fish, Esq., of Herkimer county, New York, Harvey Farrington, Esq., of Canada West, H. F. Giddings, Esq., of Ashtabula county, Ohio, that the constituent elements of the soil exert a controlling influence on the quality of milk and its products, made from grass grown on such soil; it therefore behooves every one who contemplates entering dairy husbandry in a new region to give attention to this matter.

The important part which the dairy fills among the food-producing agencies of the land we believe is not fully appreciated by the mass of mankind. It is a very common error, when speaking of the dairy or the dairy interest, to apply it only to the manufacture of *cheese*, and hence we often hear the remark that such or such a place is not adapted to the dairy, for the sole reason that no *cheese* is manufactured there, while upon strict inquiry we find perhaps that as much or more butter is made there than in some places which have a great reputation as dairy districts.

This, however, is not true of the Western Reserve dairy district, for we find that some of the Reserve counties which produce large quantities of cheese produce also large amounts of butter; Trumbull county, for instance, is the first butter-producing county in the State, and also the second cheese-producing county, Geauga being the first.

The Western Reserve produces over nineteen-twentieths of all the cheese produced in the State, and over one-fourth of all the butter manufactured in the State, and this, too, it must be recollected, is all, or nearly so, produced on the comparatively small territory heretofore described.

According to the most reliable statistics and best estimates, there is within the Western Reserve about 3,401,435 acres of land, of which about one third, or (1,133,812) one million one hundred and thirty-three thousand eight hundred and twelve acres, are devoted to dairy purposes; this includes, however, a large amount of uncultivated and wood-land; besides which there is kept on almost every dairy farm more or less of young stock; but as this young stock is, for the most part, heifers being grown to replenish the dairy, as the cows fail through age, disease, accident, etc., it is but just to make no account of the young stock either way, and as wood and timber land is considered a necessary adjunct to every farm, no deductions need be made on that score.

Probably a fair, average, market value for dairy farms is about fifty-five dollars per acre. Taking this as a basis, we have of capital invested in dairy farms on the Reserve ($62,359,660) sixty-two million three hundred and fifty-nine thousand six hundred and sixty dollars, on which there is kept (132,500) one hundred and thirty-two thousand five hundred cows, or one cow to a trifle over eight acres of land.

Allowing an average value of forty dollars to the cow, gives ($5,390,000) five million three hundred and ninety thousand dollars invested in cows on the Reserve.

The average number of cows to each dairy is not far from fifteen, which gives (8,833) eight thousand eight hundred and thirty-three dairy farms, averaging one hundred and twenty-eight and a half acres to the farm.

Other capital besides the foregoing, such as young stock, teams of horses, mules or oxen, farming and dairy untensils, wagons, etc., is invested in the dairy business, and of which no reliable statistics are attainable, and of course the best that can be done will be to make careful estimates. Each dairy farm requires one team of horses, mules or oxen, worth, on an average, say three hundred dollars; a wagon, say one hundred dollars; farm implements, mowing machine, plows, etc., say two hundred dollars; young stock, say three calves, three yearlings, and three two-year olds, with hogs for family use, worth altogether, say two hundred dollars more; to which we should add, at least, two hundred dollars for household and dairy furniture and fixtures; making in all one thousand dollars to each farmer who keeps a dairy invested in these artiticles of personal property necessary on every dairy farm; which gives us an aggregate of ($8,833,000) eight million eight hundred and thirty-three thousand dollars of capital invested in these articles, animals, etc. We are now ready to present a recapitulation of the several items invested in the dairy business of the Reserve:

1,133,812 acres of land, at $55 per acre	$62,359,660
132,500 cows, at $40 each	5,390,000
Other property on 8,833 farms, at $1,000 each	8,833,000
Giving a total of	76,582,660

Seventy-six millions five hundred and eighty-two thousand six hundred and sixty dollars, as the amount of capital invested in the dairy business of the Western Reserve, one year's interest of which, at six per cent., amounts to ($4,594,959.60) four millions five hundred and ninety-four thousand nine hundred and fifty-nine dollars and sixty cents.

From the most reliable data within reach, we compute the value of dairy products on the Reserve in 1868 to be ($7,948,981.15) seven millions nine hundred and forty-eight thousand nine hundred and eighty-one dollars and fifteen cents, leaving a balance, after paying the interest on the investment, of ($3,354,021.55) three millions three hundred and fifty-four thousand and twenty-one dollars and fifty-five cents, with which to pay for the labor, taxes, insurance, repairs, and other incidental expenses; or ($379.71) three hundred and seventy-nine dollars and seventy-one cents average to each of the 8,833 dairy farms.

This would be a bad showing for the dairy interest of the Reserve were it not for the fact that dairy farmers generally produce enough from their farms, aside from the products of their dairies, for the support and maintenance of their families, and very many of them enough to pay for repairs, taxes, hired labor, insurance and all other incidental expenses besides, thus leaving the above named average amount as clear profit.

It will be seen from the foregoing that there is being kept on the Reserve, by dairy farmers, an average of only one cow to eight acres of land; and doubtless very many will say that our calculation is erroneous, for the reason that there *are* farms which keep, and keep well, an average of one cow to less than five acres, and even, on some highly improved farms, there is kept an average of one cow to every three acres.

We freely admit, and even point to such instances with pride, as showing the capacity of our soil and the enterprise and thrift of some of our farmers, that there are some farms in such a state of productiveness as to keep a cow to each three acres; still, we know perfectly well that there are farms, in the present state of their cultivation, incapable of keeping even one cow to eight acres, and have no hesitation in repeating the declaration that the average of Western Reserve dairy farms, in capacity for keeping stock, is only one cow to eight acres.

The exceptions above alluded to are worthy of some further consideration, inasmuch as the fact is thereby demonstrated that the productiveness of Western Reserve dairy farms may be largely increased, and thus the aggregate wealth of the people largely enhanced.

A careful examination of this matter shows that those farms which keep the largest percentage of stock are those upon which the most labor is expended in growing forage crops, and especially such crops as are adapted to green soiling; and the king of these seems to be Indian corn, sown broadcast or in drills. I have grown this crop sown broadcast, planted in hills and sown in drills, and of these my decided preference is to grow it in drills, as by this method more than double the amount of forage can be produced to the acre than would be if sown broadcast, and with very much less labor than when planted in hills. Its value for feeding green I regard in about the following ratio: one acre of drilled corn as being equal to two and one-half of heavy clover; one and three-fourths Hungarian grass; one and one-half oats, or one and one-half rye. Other crops I am not acquainted with the value of when fed green, and therefore am not prepared to speak of, excepting sorghum, and not of this when grown exclusively as a forage crop. I have fed sorghum in the green state enough, however, to satisfy me fully that it is second to nothing, unless it be Indian corn, as a forage crop for milk cows.

We often hear the remark from Eastern men, cheese dealers, butter dealers and dairymen, that Ohio cannot produce as good butter and cheese as New York and New England; and when pressed for a reason, they will tell you that the quality of pasture and meadow grasses, and forage plants generally, is not as good in Ohio as in New York and New England; that there is a greater proportion of wild, sour plants and grasses in our Ohio pastures than in those East. Such assertions as these, when made to one who is conversant with the geological formations of the two regions and the flora of each; who has, like the writer, played in his boyhood on the hills of New England, who has traveled over the hills, valleys and plains of Eastern, Central and Western New York, and has spent half a lifetime on the Western Reserve in Ohio, and who is personally acquainted with all the grasses of all these sections, and to whom the foul weeds of each section have a perfectly familiar appearance, simply shows the ignorance of the person making them of the true state of the case. To enumerate some few foul plants, found extensively at the East, which either do not exist in Ohio at all or are so rare as to escape notice: First, the small variety of brake usually called the "Polypod off the Oak," an acrid, astringent vegetable, very abundant in Eastern New York and New England in meadows and pastures, in many places comprising the largest share of meadow vegetation, and which is almost entirely unknown in Ohio. Second, the "Mouse Ear," as it is locally called, very abundant East, but wholly unknown in Ohio. Third, "Canada Thistle," very abundant East, unknown, or nearly so, in Ohio. Fourth, "Milk Weed," abounding largely at the East, comparatively unknown in Ohio. Fifth, the "Bull's-Eye Daisy," a weed which has usurped completely large tracts and even townships and counties East, but which, fortunately, is almost unknown in Ohio. Sixth, the "Upland Brake," completely covering, as it does, whole fields in Central and Eastern New York and New England, but entirely unknown in Ohio.

While these foul weeds abound throughout the East in pasture, field and meadow, in Ohio the case is widely different; and when we enter a pasture or meadow, we find all the best varieties of grass, and very little else; and at the head of all these stands white clover, pre-eminently the best known vegetable for a cow in milk, both as regards quality as well as quantity; and this variety of grass, throughout the dairy regions of the Reserve, is fortunately very abundant everywhere. Next in abundance is June Grass *(Poa praetensis)*. Timothy and red-top are also very abundant, and these four just named, with red clover, comprise almost the entire vegetation of pastures and meadows on the Reserve.

In view of these facts, it is obvious that we must look to some other cause than our pastures and meadows, or the grasses growing in them, for the inferior quality, or lack of quality of Ohio dairy products.

That there are large amounts of inferior butter and cheese produced in Ohio we do not pretend to deny, but that the soil or the vegetation is in the fault we *do* deny most emphatically. Neither will I pretend that our natural facilities are all that could be desired, for indeed they are not, and I may as well speak in this connection of the disadvantages which beset the Reserve dairyman, and which the eastern dairy farmer is not obliged to meet. First, climatic influences: I find by experience that in localities situated farther south the mean temperature is not only higher, but the period of greatest summer heat is more prolonged and the heat more intense, and that it is during these periods of great heat that most, if not all, the bad cheese is manufactured, and that milk during these periods is much more liable to taints and putrefactive ferments, and inasmuch as the dairy regions of the Reserve are situated farther south, and are subject to a higher mean temperature, a more prolonged and intensely heated term in summer than New York and New England; by just so much do they possess a natural advantage over Ohio dairies.

The greatest difficulty, however, in my estimation, with which our Western Reserve dairymen have to contend is a lack of water and impure water for their stock. This trouble, however, is, fortunately, not universal, by any means; in fact, very many farms are as well supplied with springs and running streams as are any eastern farms. Still there are a great many farms destitute of springs and running streams, upon which the sole dependence for a supply of water for the stock is from rain water. This would all be very well could the rain water be preserved pure, but, as is generally practiced, an excavation is made in the soil or a slight dam of earth thrown across some shallow ravine, thus forming an open reservoir, with mud bottom, sides and banks, which, during seasons of heavy rains, becomes filled with surplus water, and to this the cattle are forced to resort for drink during long periods of drouth, and what, with the tramping of the stock, stirring up the mud and slime of these pools, together with the droppings and excrements of the animals themselves, coupled with the natural tendency of the water to become stagnant and putrid by standing a long time, it is no wonder the milk drawn from animals exposed to such influences should have a great tendency to putrefy, and that butter and cheese manufactured from such milk should be inferior in quality. This difficulty might, to a great extent, be obviated by digging wells and watering cattle from them, instead of from these stagnant pools. The labor of pumping water for a large stock, it is true, is quite a tax on the farmer, but the advantages gained would over-balance all that, besides there are many devices for raising water from wells for watering stock by means of wind-wheels, some of which are feasible and by no means expensive, and will, no doubt, come into general use; the main point being to convince the farmer of the necessity of something of this kind, and there is no surer way of doing that than to enlighten the farmer on the subject of milk.

Milk as Food.—How much has been said and written on this subject, and still so little positively known in regard to it, still so imperfectly understood by those whose business it is to produce it and prepare and preserve its products for food.

In order to arrive at correct conclusions in relation to this subject, it will be necessary to discuss each branch of the subject separately, and before we get through we propose to throw all the light in our power upon it, even at the risk of being considered prolix and tiresome.

Milk is an animal secretion, produced by the class Mammalia, for the sustenance of their young, and is the nearest a perfect food, that is, it contains every element necessary for the growth and development of the physical system, its quality and properties varying and being controlled by the orders of animal producing it; different families, the several genus of the same family, different species of the same genus, and even different individuals of the same species, exhibit marked differences in quantity, quality, and constituent proportional elements. Therefore, in considering this matter, the animal producing the milk comes naturally to be treated of first. Although the milk of the goat, the sheep and the camel are used for human food, the milk of the cow is the variety of milk most in use for that purpose, and it is that to which we are to direct our attention in this essay.

Our own country has no well-defined and marked breed of cows peculiarly its own; whereas, England, Ireland, and various continental countries have their own peculiar and distinctive breeds well marked and defined, many of which have been introduced into this country and are being bred to a greater or less extent, each different breed presenting different characteristics in regard to their milking qualities. The Ayrshire is well known as a superior milk breed, so far as quantity is concerned, while the Alderney is considered its superior for butter, and the Shorthorn Durham, although giving less in quantity, is thought to be unexcelled in quality. The Devon produces a milk rich in butter and unsurpassed for its fine golden color. Each breed has its favorites and its advocates. All things considered, I am inclined to give the preference to the Ayrshire for general dairy purposes, and think dairymen would do well to introduce that breed for crossing with their herds. The age of the cow, also, exerts an influence on the milk, heifers under four years generally producing milk less rich in butter and caseine than that produced by older animals, and also lacking in color, and as the animal advances in life the proportion of solid matter increases and the color is heightened until about twelve or fourteen years old, when a decline usually begins, and after sixteen progresses rapidly, rendering a cow usually worthless or nearly so at seventeen or eighteen years old, although there are instances of cows continuing useful in the dairy up to twenty, but such instances are rare.

The health of the animal is a very important consideration, and should never be overlooked, if we propose to use her milk for food, as much mischief has been done and much misery caused by using milk from diseased animals, and butter and cheese manufactured from the same. We have laws for the punishment of those who offer for sale the flesh of diseased animals to be used as food, and it is very proper and right that it should be so, that the public may be protected from the ills that might follow from the use of diseased food. But, while granting protection against diseased flesh, our law-makers have left us entirely at the mercy of the unprincipled wretch who, for a few dimes, would endanger the health, and perhaps the life, of his fellow beings by the sale and use of milk from diseased animals, which I regard as much *more* dangerous to use for food than diseased flesh.

It is, I believe, a tolerably well established physiological fact, that females of the class Mammalia, while giving milk, are frequently relieved of disease, and especially of poisons, through the agency of their milk, this secretion taking up and carrying off from the system the active principle, thereby becoming charged with it to that extent that the life of those partaking of the milk under such circumstances was lost or greatly endangered. This I believe is especially true of contagious diseases; the mother, in numerous instances, being exposed to contagion, conveys by her milk the disease to her nursling, at the same time escaping entirely herself from all taint of the contagion.

Cattle diseases of various kinds are becoming fearfully common in our country; hence great care is necessary to guard against the use of milk from diseased animals, either in its unmanufactured condition, or when manufactured into butter and cheese.

In order to secure a healthy condition of the animal, care is requisite in regard to food, drink, shelter, general treatment, and a proper and due consideration and regard for the varying conditions and vicissitudes of our changeful and ever-varying climate.

Food for an animal giving milk must of course be supplied in larger quantities than would be necessary to sustain the same animal under similar circumstances not giving milk. This fact is often overlooked, through inattention to well-known physical laws. The natural waste of the animal system must be supplied, and during the younger years the natural growth must be provided for; and, as the common practice is of milking the animal right on through the period of gestation, the growth and development of the fœtus must be met; and when we consider that, in addition to all this, the constant drain of secreting a large amount of milk is going on, we are led to stop and wonder if the organs of mastication and digestion are equal to the enormous task imposed upon them, even if food in sufficient quantity be supplied; and we are not surprised to find that a cow usually loses flesh while in milk, as she is generally kept and fed by the great mass of our dairy farmers. And right here is, I believe, a fruitful source of disease; because when the stores of flesh already laid on must be drawn upon to supply the drain on the physical system, the animal must suffer to some extent from hunger; and hunger, we are told by all physiologists, induces disease. At all events, there can be no doubt that an animal which is constantly losing flesh, has less vitality, and consequently less power to resist the approach of disease, than one which is constantly laying on a little more flesh.

Not only should the food be sufficient in quantity, but the quality should be good, and such as is adapted to the production of milk. Hence green fodder is a requisite, which can be substituted in our climate during the winter only by root crops, such as potatoes, carrots, turnips, parsnips, beets and mangolds. I do not purpose, at this time, to discuss the comparative merits of these several roots and tubers. They are all good, and each farmer must be his own judge as to which he can grow most easily and cheaply. In fact, I consider every farmer should try experiments to test this matter of growing root crops for cattle food, and when he has determined which variety will furnish the most food at a given cost, to go on and continue to grow that crop. In addition to his root crop, he should, of course, be provided with corn fodder, and also grain of some kind; and in my experience, I have found buckwheat, rye, oats and corn, in the order named, excellent food for milch cows, when ground and made into slop. And here let me say, I would never feed meal *dry* to milch cows, unless feeding largely of roots at the same time.

During the summer, fresh green pasture, supplied in liberal quantities, is nearly all that is requisite to secure the greatest flow of milk; still there is in fact but a very small portion of the season that additional feed is not requisite and will largely pay, particularly when drought begins to shorten the pastures. Our fields of drilled corn are just what is needed, not only to keep up the flow of milk, but to prevent waste of flesh, and enable the animal to better withstand disease.

Also, during seasons of protracted drought, is the time when we should be particularly watchful in regard to supplies of pure wholesome water for the stock. But little need be added here to what has already been said on this subject. I can only entreat all dairy farmers to give the subject serious thought, and where there is a liability to a short supply of pure water for your stock, during periods of long-protracted dry weather, not to wait until the evil is upon you, but set about providing a never-failing supply against the time of need.

Another point I would like to urge upon you, is the importance of shelter from the rough storms of our winters. Although your food may be of the best quality, although you may deal it out with a prodigal hand, if your cattle must shiver in the storms, and pick their food from the half-frozen mud of your yards, there will of course be no thrift, but on the contrary a constant waste, a drain on your deposits, which you ought not to allow. Nor is this the only reason why shelter should be provided for the stock. There are times when the comfort and enjoyment of the animal require that they should be sheltered as well from the scorching rays of our summer sun as the sweeping blasts of our fickle winters. Especially while being milked should the cows be under shelter, and so disposed as to be quiet and contented. All excitement should be avoided; everything which might tend to produce a fevered state of the blood; and in no way can these conditions be so well observed as when the animals are comfortably housed. All running, racing and chasing by those who are doing the milking, can be avoided; all worrying and hooking of one animal by another is obviated; and if they are to be fed here, it can be done as it should be—each cow getting her share undisturbed by others. The advantages of shelter for the purpose of milking, if for no other, are so great that I should provide stabling for that purpose, if from no other motive.

The animal organism is such that whatever is inhaled or drawn into the lungs in the act of respiration, comes in more immediate contact with the blood, and is sooner absorbed and carried through the system, than when taken into the stomach; hence, whenever a milk-giving animal is compelled to breathe an atmosphere loaded with foul odors, more or less of them are absorbed by the blood, and from thence pass into the secretions, and especially into the milk secretion. This has been fully demonstrated to me in various ways and at different times during my past experience; and I regard the practice as totally wrong and altogether reprehensible, to keep milch cows where they are compelled to breathe a foul or fetid air, such as arises from filthy stables, or the decomposition of animal matter. One practice I have observed, which I cannot too strongly condemn, namely, that of allowing the carcasses of slaughtered calves to lie about the milking yard or barn, to throw off a vile and sickening stench, very offensive and positively endangering the sweetness of all the milk drawn from the dairy for weeks; and I must in all candor say that I regard milk drawn from cows under such circumstances and conditions, as totally unfit for human food; in fact, although the cow kept in such a stinking, nauseous atmosphere, may not exhibit marked disease, still I must and do regard milk secreted by her at such times as containing the germs of disease and death to all who use it. Hence I think too much cannot be said on this point, and farmers cannot be too strongly urged to look to the purity and wholesomeness of the air which their cows are obliged to breathe.

A few words, in this connection, in regard to the process of milking:

We suppose that all the conditions heretofore mentioned have been attended to, and that we have a healthy, well-fed cow, standing quietly in a clean, well-kept and well-ventilated stable; that her food has been not only abundant, but of good quality, and that she has been well supplied with pure, wholesome water; that she has not been roughly handled or hard driven, but all of her treatment has been mild and gentle; in short, that as she stands, she is the very personification of content and quiet enjoyment: we are prepared, and have a right to expect, to draw from her udder a nice mess of pure, healthy, wholesome, fine-flavored milk. But before proceeding to do so, let us be sure that we are duly and truly prepared. First, what sort of a vessel is that you have to receive the milk? A *wooden* pail! Put it aside; it is unfit for drawing milk into from the cow, and *never can be* otherwise; the pores of the wood absorb a portion of the milk, which will become sour and putrid in spite of washing and scalding, and will innoculate the milk with an acid or putrid ferment, and your milk will be on the high road to ruin immediately. No! discard your old wooden milk pails, and get tin; let these have been *thoroughly* washed and scalded. Now are you ready? See there! the cow has tramped through the mud somewhere, and her udder and teats are covered with it. Get your old wooden pail, and bring some water; warm it enough to remove the chill, if it is cold, and proceed to wash the udder and teats very clean; let it be a few minutes, to dry, and then proceed. But stay! your own hands are filthy; wash them first. This idea that you can get clean milk on any other principles, or by any other process than that of perfect cleanliness in every step and stage of the process, is simply impossible. Now I believe you are ready. Proceed to draw the milk quietly and rapidly, being careful not to hurt or annoy the cow; and should she manifest restlessness, do not undertake to cure it by harsh treatment, but use her kindly and gently, and, my word for it, you will have a bucket of milk fit for a king, or even a free-born American citizen.

We have now succeeded in obtaining some pure milk, supposed to be just right and what it should be, and before proceeding farther let us stop and inquire what it is? Why, it is milk, to be sure; what else should it be? I know; but chemistry tells that, instead of milk being a simple substance, it is a highly complicated compound. 1000 parts of pure milk

Contain of	water	837.48
"	lactose, or milk sugar	45.54
"	caseine	46.50
"	butter	57.04
"	albumen	7.24
"	mineral salts, chiefly chlorides	6.20
Total solid matters		162.52

In order to show the analogy between milk and blood, I subjoin an analysis of blood, 1000 parts of which

Contain of	water	779.00
"	fibrin	2.20
"	fatty matters	1.60
"	albumen	69.40
"	blood corpuscles	134.50
"	extractive matters	6.80
"	mineral salts	6 50

What is here styled blood corpuscles are rounded globules, consisting of a thick albuminous membrane, called globulin, filled with a red coloring matter, termed hematin, in which iron is a large element. This globulin is almost identical with caseine of milk.

Here we see that milk and blood are analogous compounds, as might be expected, as milk is secreted from the blood, and the animal structure is built up from the blood, while milk contains all the necessary constituents for the growth and structure of the physical frame.

These two substances, milk and blood, are, as might be expected, subject to similar changes, and both having a great susceptibility to influences of change, and this fact is one which I feel very anxious to impress upon the minds of every one who has anything at all to do with milk; in fact, I believe if every one who handles and produces milk or manufactures it into butter or cheese had clear perception of this susceptibility to the influences of change, and the way and manner in which changes are induced, we should hear less complaint of bad flavor in cheese, loss of flavor, etc.

One of the most active agents of change in milk is what I shall call a ferment; others might term the same thing a yeast; and others, still, a virus. The name I regard as immaterial, if we can only understand how it is produced and how it acts.

Ferments which act in the decomposition of milk are of two kinds; the acetous ferment, which induces a change in the sugar of milk, when lactic acid is formed; and the putrefactive ferment, which induces change in the albuminous portion of the milk, by which its chemical composition is broken up and its constituent elements enter into new combinations, and new compounds are the result.

Perhaps we shall have a more perfect understanding of this matter if we have before us the exact chemical composition of milk, as we can thereby discover how readily and easily a change may take place by a simple re-arrangement of atoms. We have already seen that milk is composed of water, milk sugar, caseine, butter, albumen, and some salts. These salts are of three kinds—chlorides, phosphates, and sulphates; chloride of sodium or common salt forming the largest proportion. Although the simple elements which compose milk are few in number, still their arrangement is such as to make it appear as it really is, very complex.

Water is well known to be a compound substance at the present time. Although once considered one of the elements, it is composed of one atom of hydrogen and one of oxygen; or, as some writers have it, hydrogen 2, oxygen 2: or, by weight, 8 parts of oxygen to 1 of hydrogen; or, by bulk, 1 of oxygen to 2 of hydrogen. The atomic arrangement of lactose, or milk sugar, is: Carbon 24, hydrogen 24, and oxygen 24; while sucrose, or cane sugar is, carbon 12, hydrogen 11, and oxygen 11; and glucose, or grape sugar, is, carbon 12, hydrogen 12, oxygen 12, and 2 of water. What I wish to call attention to more particularly here is, that, although the elements are the same in all the sugars, and combined in nearly the same proportion, still the combining numbers for milk sugar are twice as high as either of the others, and this will be found true of nearly all the constituents of milk, the numbers representing the atomic arrangement being high, and why I wish to call particular attention to this fact is, that it is a well-understood law of matter that those substances whose arrangement of elementary atoms are represented by high numbers are more readily decomposed; that is, they are more easily operated on by agent of change, their elements assuming different and more simple combinations; for instance, milk sugar, when changed to lactic acid, has lost nothing and gained nothing; its elements are the same and in the same proportion, being simply re-arranged in a more simple form; and it is now, carbon 6, hydrogen 5, oxygen 5, water 1, which you will recollect is H. O. (hydrogen 1, oxygen 1); so we see that the three elements, carbon, hydrogen and oxygen, are in the same proportions in lactic acid as in milk sugar, only arranged in a more simple form, and, as might be expected, altogether less liable to change than before; in fact, as can be proved by keeping the whey from cheese, will remain unchanged an indefinite length of time after lactic acid is once formed.

We now come to consider the two component parts of milk most liable to change, caseine and albumen, and when we look at the atomic arrangement of the elements we shall not be surprised that they are so susceptible to influences of change. The atomic arrangement of caseine is: Carbon 288, hydrogen 228, oxygen 90, nitrogen 36, sulphur 2; and of albumen is: Carbon 216, hydrogen 169, oxygen 68, nitrogen 36, sulphur 3. This shows at a glance the highly complicated nature of these substances, and to the chemist the ease and facility with which these compounds may be changed and their elements enter into new combinations; in fact, it may be compared to a highly complex machine, a very slight disarrangement of any of its delicate parts disturbs the working of the whole machine.

So much for the theory of the ease and facility with which change may be induced in milk, which in practical life is fully sustained, as we all know. Indeed, at ordinary temperatures, change in milk begins immediately after it is drawn from the animal, and continues with more or less rapidity until decomposition is complete, unless artificially arrested, which we will consider hereafter in its proper place.

I have already stated that these changes in milk seem to be and are induced by ferments. They also occur spontaneously; that is, the action of the surrounding atmosphere and the rearrangement of the elements through the natural laws of motion and change. But in these changes, as in the one already referred to of milk sugar to lactic acid, there is nothing lost and nothing gained, being simply a rearrangement of atoms. Such changes are styled changes by contact, or inductive changes by motion of atoms, and may be compared, to some extent, to the motion of machinery in a large manufactory—one wheel being acted upon and propelled by another, and that in turn by another, from the minutest mechanism in the attic to the engine in the basement, the motive *power* of all.

As a spark may kindle a conflagration that shall consume a city, so the minutest amount of putrescent matter is sufficient to effect an indefinite quantity of these changeable substances. The remarkable communicability of these effects, their activity and potency of action, are painfully illustrated by physicians who sometimes wound themselves while dissecting. The small traces of decomposing matter from the dead body which clings to the knife, is sufficient to establish a rapid decomposition in the living system, which in many cases quickly terminates in death. Another case in point is the communication of the virus of small pox, which, when introduced into the blood, reproduces its peculiar putrefaction throughout the system. Just so it is with milk. The least taint in pails, pans, milk cans, or other utensils used about the milk, from the hands of the milker, the udder and teats of the cow, or a diseased or fevered state of the animal, is sufficient to overturn the tottering equilibrium of the chemical fabric, and out of its ruins a new class of substances is produced, as unlike the original as can be imagined.

The conditions most favorable for the development of these changes in milk, we will now proceed to consider, and also the best methods of preventing them and preserving the milk in a wholesome and sweet state the greatest length of time.

The air which we breathe, as is well known, is a compound substance composed of 20.81 of oxygen to 79.19 of nitrogen in 100 parts, by volume, or 23.01 of oxygen and 76.99 of nitrogen, by weight. The fact, however, is not generally recognized, that this is not, strictly speaking, a chemical compound, but a *mechanical mixture*, its constituents being diffused throughout each other according to the laws of gaseous intermixture, and as a natural consequence, each element is, so to speak, perfectly free to enter into chemical combination with other elements whenever and wherever opportunity presents. Of these two elements, oxygen is the active agent of change; and it is well known that this element exists in two forms, which for distinction are called oxygen and ozone. Ozone is considered by our best chemists an allotropic form of oxygen, and seems to be oxygen greatly intensified in activity. It is armed with a new energy, and is capable of producing changes which, in its ordinary state, are impossible. This form of oxygen is produced by passing electricity through dry air. It is found to exist in the air at some times and in some situations more abundantly than at other times and in other places. For instance, it exists in the air to a much greater extent during thunderstorms, and while the air and earth are in similar electrical conditions, than at other times. Ozone, or allotropic oxygen, being the most intensely active agent of change in nature, we are here furnished with the reason why milk will change so much sooner during a thunderstorm than in fair weather; and not only milk, but every other substance is brought within the influence of this powerful agent of change at such times, and every thing seems to be undergoing an accelerated process of decay and decomposition; hence a double degree of care and watchfulness is requisite at such times. The pressure of the atmosphere seems to possess an influence on the changes which milk and its products undergo, there being some changes of milk rarely if ever noticed except during the rarefied state of the air which precedes heavy storms, and at such times cheese are more liable to swell and huff up than when the atmospheric pressure is greater.

Temperature, it is well known by all, possesses an all-powerful influence in the changes and preservation of milk. Milk at a low temperature, say below 60 degrees, will remain sweet and unchanged a long time; while at a temperature of 75 to 85 degs., milk is very soon changed. Change, however, will proceed with vastly greater rapidity in milk which has not had a free exposure to the air, than in that which has been so exposed. This proves to me that there are certain contained gases in freshly-drawn milk, which induce change unless quickly removed. Indeed, the characteristic odor of fresh-drawn milk—an odor which once removed will not return—is *strong* evidence of this fact. This odor is not agreeable to any, and to the majority of people is very offensive.

Having examined some of the conditions of change to which milk is most exposed, we are prepared somewhat to seek for proper preventives and safeguards.

From what has already been said, it will be readily discovered that the utmost care is always requisite to avoid taints of all kinds, or, more correctly speaking, ferments; for we have seen that no matter how small and infinitesimal the amount of a putrid ferment which may be introduced and brought in contact with the milk, the mischief spreads with such lightning-like rapidity, that under favorable conditions of heat, moisture, &c., perfect ruin of the milk ensues before one is aware that the trouble has begun.

The active principle of all ferments is destroyed by heating to 212 degrees; hence the necessity of scalding all utensils used about milk—recollecting that it is the heat of *boiling* water which is required, no *lower* temperature being sufficient to destroy the vitality of these putrid ferments. Hence the difficulty of cleansing wooden utensils which have been used for milk. The pores of the wood having absorbed a portion of the milk, and then become putrid, the heat of scalding water will not reach it; the milk comes in contact with it and absorbs a minute quantity, and is thus innoculated with the putrid virus, and the mischief is done. Absence of heat is a preventive of change, and freezing at a temperature of 10 degrees destroys the vitality of ferments. This chemical agent, however, we cannot avail ourselves of to purify our milk vessels, only in winter; hence it is of no practical value. It is of value to us, however, to know that a certain degree of cold nearly arrests change in milk, and will almost entirely prevent any change a long time, when there are no ferments present.

Milk may be indefinitely preserved by drying or removing the watery portion. This, however, is not practical under ordinary conditions, it being impossible to evaporate the water sufficiently in the open air to preserve it before the milk will become changed, and I know of but one process by which it can be accomplished, which is styled "Borden's Process of Condensing Milk," and is performed in a vacuum. This method of preserving milk is, however, of no general, practical interest, and is only mentioned here as showing one of the ways by which milk may be preserved.

Again, if the grand inciter of change, Oxygen, be excluded, putrefaction cannot take place, as is illustrated by the general practice of preserving all kinds of alimentary substances, meat, fruit, and vegetables, in vessels which exclude the air. It is not enough, however, to remove the oxygen from the surface of the body; that which is diffused within it must be expelled; and this leads me again to the point mentioned some time back, of the contained gases in fresh drawn milk, which, from the activity with which change will progress in fresh drawn milk excluded from the air, I believe to be mostly allotropic oxygen or ozone. The temperature of fresh drawn milk is that which has been found by experiment to be the best adapted to promote change, and here we have, at once, the most favorable condition, and the most active agent, so that if the milk be confined with its contained gases and the temperature not lowered, rapid change must be expected. Now add to these a putrefactive ferment, and a single hour of confinement, with these conditions, and the milk, instead of being a healthy, life-giving beverage, becomes a putrid mass, unfit for human food, and actually poisonous, as has been frequently illustrated by experience.

The remedy for these evils, in view of what has here been written, it seems to me, will naturally suggest itself. Let the milk, when first drawn from the cow, have a free exposure, to allow the gases to pass off, and at the same time reduce the temperature, if possible, to 55° or 60° within twenty minutes or half an hour from the time it leaves the cow. These two points faithfully attended to, and none but thoroughly cleansed implements and vessels used, and no danger of sour or putrid milk need be apprehended. Milk treated in this manner will bear to be transported long distances, and will keep much longer in warm weather, other things being equal, than milk treated in any other manner.

Practically, this matter is getting to be understood and acted upon by parties who are furnishing milk in some of our cities, it being found that milk thus cooled and duly exposed to the air during the process, so as to remove the contained gases, (or animal odor, as it is generally called,) kept twelve hours, and then transported forty or fifty miles by rail car to to the city, taken by the milkman and distributed to his customers, will keep sweet and good longer, after all this, than the milk delivered by the farmer who has just drawn it from his cows and started at once for his customers in the city; showing most conclusively that milk properly treated will keep from twelve to twenty-four hours longer than when the cooling and areating has not been attended to. Indeed I apprehend that much of the difficulty complained of in regard to what is known as "swill milk" in some of our cities arises from this same cause, excluding the fresh drawn milk from the air, with the high temperature and the contained gases not removed, thus inducing putrefaction of the milk before it is delivered to their customers, and selling an absolute poison, instead of a healthy article of diet.

This change, putrefactive fermentation of milk, is as distinct from *sour* milk as can well be conceived, and, except in the hands of an expert, is not readily detected until it has progressed some time; in fact the milk thus affected, although it may not possess just the right odor, does not have an offensive taste, but, on the contrary, actually tastes *sweeter* than milk which is just right, and I have frequently been disputed when I had asserted that a sample of milk which we were examining was tainted, because to the taste it was so sweet, and it was only after a time had elapsed sufficient to develop the peculiar odor of tainted milk that we could agree in the matter. One product of putrid fermentation in milk is hydrosulphuric acid, composed of: hydrogen 1, and sulphur 1; it is a colorless gas, having the well-known odor of decayed eggs. When breathed it is highly poisonous. It readily dissolves, and is, therefore, held in solution in putrid milk, imparting to the whole its own taste and smell, as well as other properties. Another product of this fermentation in milk is phosphide of hydrogen; phosphorus 1, hydrogen 3, (phosphuretted hydrogen,) a colorless gas, with a peculiarly fetid offensive odor, and also poisonous when inhaled. Complaints are frequently made of poison cheese, and much speculation has been had as to the cause, some attributing it to the coloring used in the manufacture, and others to metalic oxides absorbed from lead painted utensils, or copper kettles, etc., although it might be *possible* for some of these causes to make an unwholesome article of cheese, still I am decidedly of the opinion that, could the truth be known, every instance of poison, or supposed poison cheese, would be found to arise from putrid milk used in its manufacture.

I have been thus particular in treating of this peculiar condition of milk, for the reason that it is very imperfectly understood by those who produce milk and manufacture cheese; besides, it is the prime cause of nineteen-twentieths of all the trouble which cheese makers encounter in this country in manufacturing a prime article of cheese.

There is another change to which milk is subject, which will now come into consideration, which is the coagulation of its caseine. It is held by most chemical writers that the caseine of the milk is held in solution by means of an alkali, and hence, when acid is present to neutralize this alkali, the caseine is precipitated or thrown down from its solution, and that, in accordance with this view alone, can the action of rennet be accounted for in producing coagulation. I am inclined to doubt the correctness of this view, for the following reasons: First, add an alkali, say soda, to milk until it shows a distinct alkaline reaction on test paper; then with the same kind of alkali make a preparation of rennet alkaline by test; then add this alkaline rennet to this alkaline milk, and coagulation as readily ensues as though each possessed an acid reaction, and the whey, when it separates, will be found to have an alkaline reaction. Now, in view of this fact, it might be said, with just as great a show of truth, that the caseine was held in solution by the presence of an acid as by the presence of an alkali; the truth is, in my opinion, it is neither the one or the other, but that the caseine remains in a state of solution in the milk by reason of the electrical condition of its atoms, and that the addition of rennet gives to these atoms an electrical impulse, like the application of a magnet to a heap of iron filings, causing them to assume magnetic polarity, whereby one attracts another, and that another, and so on indefinitely. So with the atoms of caseine. Their polarity is changed by the simple contact with this active polarizing principle of the rennet, and those atoms which, by reason of similar polarity, had heretofore repelled each other, now, by the same law, having opposite polarity, attract each other, and a consolidated mass is the result. When an acid is added to milk, or whenever it becomes spontaneously sour by the change of sugar of milk to lactic acid, coagulation takes place, but it is of a different character from that produced by the action of the rennet;

the watery portion which is left in the one instance being clear and limpid as water, and in the other possessing a greenish yellow tinge of color. From this, it appears, that the action produced by the acid has consolidated more of the solid constituents of the milk than the action induced by the rennet. This can be proved to be true in this way: Take a quantity of the whey or watery residue when coagulation is induced by the rennet, heat it to the boiling point, and then add an acid, and an instant coagulation will take place, and the whey becomes as clear as water, thus showing conclusively that there is a large amount of coagulable matter which the active principle of rennet does not affect, but which an acid will and does cause to coagulate. This is the albumen of the milk, and this it is, I think, which is affected by putrefactive fermentation, for this reason, putrefaction will go on in the whey, notwithstanding the action induced by the rennet, until, by the presence of an acid, coagulation of the albumen is induced, after which putrefaction ceases. Here, I think, we have the key to the position, and can explain why it is that chemists have supposed that the caseine was held in solution by the presence of an alkali; the albumen may be held in solution by an alkali, or it may remain in solution like caseine by reason of the magnetic or electrical condition of its atoms, the change produced by the action of an acid being merely a change of polarity produced by contact. Coagulated albumen exerts a similar power on the caseine which the active principle of the rennet does, and thus we see how an acid may appear to produce coagulation of both the caseine and albumen of the milk. Now, these two protein compounds, caseine and albumen, are the only portions of the milk upon which putrefaction can act, and upon these only when a certain amount of moisture is present, and most readily when in a state of solution; hence, when they are coagulated, the superabundant moisture removed by pressure, and a sufficient amount of salt added to act as a preservative, putrefaction can produce no farther effect. This, then, accounts for the fact that the presence of an acid in the whey in cheese making, before the curd is pressed, will prevent the cheese from swelling and becoming porous, and having that rank odor and sharp, pungent flavor so much complained of by dealers in cheese.

It has already been stated that phosphoretted and sulphuretted hydrogen are produced by putrefactive fermentation, and that the fetid odor and sharp flavor observable in porous, spongy cheese is owing to the presence of these gases. Hydrogen is the lightest gas known. Its weight, compared with that of pure atmospheric air, calling air·1, is 0.0692, or less than one-twelfth the weight of air. Hence, whenever this gas is generated by reason of the liberation of the hydrogen from its compounds, its tendency is to expand; and consequently, being entangled in the substances of the curd at its liberation from its compounds, its expansive force swells the cheese, causing cavities to form in the same, which are simply reservoirs for the gas, a part of which is absorbed by the remaining portion of water in the cheese, and thus is produced a strong, sharp-flavored, stinking cheese.

This question of preserving milk free from taint or putrefaction, is one of great practical importance to dairymen and cheese factories. It is found, in practice, that milk which is cooled as soon as drawn from the cow will keep a long time, and may be transported long distances without any danger from putrefaction, provided every utensil used about the milk is *perfectly cleansed;* and milk which is thus cooled and handled for cheese factories may *all* be delivered in the morning, thus saving the expense of delivering milk twice a day, as is generally practiced.

To enable farmers and those furnishing milk to cities, cheese and butter factories, to accomplish the cooling of their milk in the least possible time and with the lightest expense practicable with efficiency, is the aim of inventors, and many new machines and devices are being brought out with a view to effect these objects. At the late meeting of the American Dairymen's Association, there were exhibited a number of patent milk coolers, none of which, however, seemed to fully answer the wants of the dairymen present. Indeed, almost every one who spoke at that meeting on the subject of milk, expressed themselves as being very much in favor of the adoption of some plan for cooling the milk at the farmer's place of milking; that some device which should be cheap, efficient, durable and easily kept clean, was the great want of the times among cheese factorymen and their patrons, or those furnishing them milk.

There is another change to which milk is subject, entirely different from any of those already described, as those are chemical changes exclusively, while this is supposed to be entirely mechanical. I allude to the separation of the butter. Milk, as regards casein, albumen and milk sugar, is a solution ; but in relation to the butter, it is an emulsion or a mechanical mixture. The butter exists in the milk in the form of minute globules, each one enclosed in a sack or thin film of albuminous matter; and whenever these sacks are ruptured, the butter comes together by an inevitable law of matter, and is held by the cohesion of its particles. This article, although it appears to be a simple substance, is in reality a complex and highly complicated compound. The principal ingredients are margarin 68 parts, and olein 30 parts in 100; the remainder butyrin, caproin and caprylin, composed of butyric, caproic and caprylic acids, united with the common base, glycerin. The characteristic odor of butter is owing to the presence of these latter-named substances, the caproic and caprylic acids, receiving their name from *capra*, a goat, the odor of these acids resembling the well-known characteristic odor of that animal. Margarin and olein are severally composed of margaric and oleic acids, combined with the common base, glycerin. The atomic constitution of margaric acid is carbon 34, hydrogen 34, oxygen 4; of oleic acid is carbon 36, hydrogen 34, oxygen 4; of glycerin is carbon 6, hydrogen 3, oxygen 6.

It will be observed that the elementary substances, carbon, hydrogen and oxygen, comprising nearly the whole of butter, have in this substance low combining numbers, and hence are less liable to change their combinations than the same elements in casein and albumen; besides, with the exception of a small portion of these latter-named substances, which adhere to the butter, although ever so well worked and washed, the fickle element, nitrogen, is not present in butter, and for that reason is less liable to influences of change than those other substances of which nitrogen forms a large proportion.

It will be further observed that oxygen forms but a small proportion of the elementary composition of butter—carbon and hydrogen forming by far the largest part. In fact, butter may be classed among the hydrocarbons, as hydrogen is found in it in excess, and oxygen, the grand agent of change, is in small proportion; and, as we might naturally expect from its elementary composition and chemical combination, is easier preserved than any other portion of milk. Hence the manufacture and preservation of butter requires less care and skill than the manufacture of cheese. Indeed, as above written, the separation of the butter from the other ingredients of the milk is a mechanical process; still there would seem to be a necessity for some chemical changes during the process to facilitate the separation. For instance, a certain range of temperature is requisite, as it is well known that churning is ineffectual at a temperature of 48 deg. or under, while on the other hand, if churning is performed at 65 deg. or over, a very imperfect separation is the result, and the product inferior. Again, when the milk is first drawn from the cow it will not separate from the butter, with any amount of churning, until a process of cooling has taken place; and even when all other conditions are right, unless free access to the air is provided, the process of churning becomes tedious, not to say impossible. Therefore, in view of these facts, I am led to the conclusion that churning is not, as is generally supposed, purely a mechanical process, but that certain chemical changes are requisite and absolutely essential to the separation of the butter; but what these changes are, what combinations are broken up, and what new combinations are formed, I do not pretend to know, and therefore will not attempt to explain; and can only hope that some more competent person may give us a scientific explanation of this matter. One thing is certain, whenever butter has been heated sufficiently to convert it into an oil, although it may solidify again on cooling, and become as firm and solid as it was before, it is no longer the same substance it was before—is not BUTTER as it exists when first churned, and a very slight elevation of temperature will reconvert it into an oil, a much lower degree of heat being sufficient than at the first melting. And this I regard as another evidence that chemical action has something to do with the separation of the butter from the other portions of the milk during the process of churning; and that after all that has been said and written on this subject, we are still very ignorant in regard to this hitherto considered simple matter; and that, after all, the butter globules are not broken, as is supposed, by the agitation of churning, and that this is the reason why butter which has been melted assumes so different an appearance from that which it possessed before, and also why it will melt a second time at so much lower temperature than at first. May not the explanation be this: In churning, the enclosing film or sack of the butter globule remains intact, and the butter is simply an agglomeration of these sacks, forming what is usually termed the *grain* of the butter; that in heating, the oil of the globule becomes expanded and bursts the enclosing film or sack, and is thus liberated or set free; and, although from the large amount of margarin contained in it (68 parts in 100), a slight reduction of temperature solidifies it, still it is no longer butter, having lost one very essential characteristic of that commodity.

Granting the foregoing views to be correct, we are prepared to explain certain other matters which occur from time to time in the experience of every dairyman. For instance, some cheese will, at every recurrence of a temperature in the dry-room above 75 degrees, seem to sweat out the oil, and in many instances it will run out so freely as to stand in puddles on the shelves, and even run on the floor. This is very objectionable, and is in fact an injury to the cheese; and so far as my observation and experience goes, is always produced by overheating during the process of manufacture. It does not follow that the whole was overheated; in fact, a small proportion only may have been so, caused, perhaps, by heating too rapidly, thus rendering it difficult to heat uniformly, whereby some portion became overheated, before the mass was brought to the required temperature; it might even be done in the milk before the rennet was added, by too rapid heating, and not attending sufficiently to the stirring and equalizing the heat. The same cause—overheating—breaks the grain of butter and renders it oily, and detracts seriously from its market value. This is usually done by working the butter with too warm hands, and working too long with the hands, and sometimes by overheating the cream before churning, or churning too warm. Come from whatever cause it may, it is objectionable, and should be avoided, if possible, in the manufacture of butter as well as cheese.

Many people have supposed that what is known as *whey butter*, is a different article from butter made from cream of milk direct. This in general terms is an error; butter being simply the oily, or fatty, portion of the milk; that part which escapes during the process of cheese manufacture into the whey being really no different from the rest, excepting in this respect—the action of the rennet, in producing coagulation, has changed the condition of the casein, and consequently more care is requisite to free the butter from particles of curd and albuminous matter than when the butter is made from cream direct, without coagulation having taken place. In a correct system of cheese-making, the quantity of butter which passes off into the whey, is so small as to be hardly worth looking after; in fact, where the process has been conducted with care by skilled hands, the amount of butter in the whey is perfectly insignificant, and will not pay the trouble of extracting.

The practice of many dairymen in the manufacture of butter would admit of very decided improvement, and in none perhaps any more decided than in the treatment of the milk; the same scrupulous care and exact cleanliness being requisite in the manufacture of butter as in the manufacture of cheese, or furnishing milk for market. The milk-pails, the pans, strainers, skimmers, churns—in short, *everything* used for or about the milk or butter—should be immaculately clean; the milk-house or room should be clean, well ventilated, free from all foul odors, and far enough removed from the stable, the pig-stye, and the kitchen, to escape all taint from these sources. An abundant supply of cool spring water is very desirable when practicable, and when this is not at hand, the defect may be remedied to some extent by laying in a large stock of ice, to be used during warm weather; ice being very important for preserving the butter and transporting to market during the warm season. The atmosphere of the milk-room should be moist and cool in order to secure a uniform cream; a dry air having a tendency to form a sort of crust over the top of the cream, which should be avoided if a really fine article of butter is sought. Neither should the milk-room be kept too cool, as this has a tendencey to develop a bitter flavor in the cream; a temperature from 50 to 60 degrees is considered most favorable. The milk should stand no longer than is absolutely necessary to effect a complete separation of the cream, which, under favorable circumstances, will be complete in from 18 to 24 hours. This may be easily proved by placing a sample of milk in a glass cream-test jar, and note the length of time during which the cream continues to rise, which I have found by experiment to be much shorter than is generally supposed, the cream *could* all become separated from the milk, and rise to the surface. As soon as the separation is complete, the milk should be drawn off at the bottom, leaving the cream in the vessel; when this is not practicable, the cream should be *dipped* off, not *skimmed*, as is the general practice, for if the cream is right, a large proportion of it will run through any skimmer. The better way is, to so arrange the milk vessels as to draw the milk from the bottom by means of a faucet. Deep vessels, say from sixteen to eighteen inches in depth, or at least a foot, are every way better and more economical for setting milk than shallow ones, the only objection being in regard to cooling the milk; but when a cooler is used, and the milk runs through it as soon as drawn from the cow, the depth of the vessel for setting the milk is no objection, but, on the contrary, is every way superior to the old shallow pan. One advantage of deep vessels is, that the cream rises with more rapidity and is all separated from the milk sooner than in shallow pans, it is more readily dipped off when the quantity is greater, there are less vessels to keep clean, and the cream less liable to crust over.

As soon as the cream is removed from the milk, if at the proper temperature, it should be immediately churned. If too warm, the temperature should be reduced with ice or cold water to about fifty degrees it the weather is warm, or sixty if the weather is cold. The temperature of the buttermilk at the moment of the separation of the butter should be between fifty-five and sixty degrees, or at the most sixty-five. Should the cream be too cold, the utmost care must be used to avoid overheating any portion of it, and thereby cause the butter to be oily. As good a method as any to warm the cream is to place it in the churn and keep the churn in a warm room until the proper temperature is acquired for churning.

When the temperature of the cream is all right, the churning should occupy from twenty to thirty minutes. I am well aware that we have any amount of patent wonders in the shape of churns, warranted to make the butter, from the most refractory and stubborn cream, in from three to five minutes; but after having used a large number of these patented churns, I have arrived at the conclusion that, unless the cream is too warm for a fine article of butter, three minutes' or five minutes' churning is rather a difficult feat, and is the exception rather than the rule.

The butter should be worked enough to free it from most of the buttermilk, and a quantity of salt added larger than is needed when finally completed; and after being allowed to stand twenty-four hours again worked, this time so as to thoroughly free it of the buttermilk, and should the salt work out so as to need it, add a little more salt; it may then be made into rolls for the table, or packed in stone crocks or clean, new tubs or firkins. Butter tubs or firkins should be made of good oak, ash, or beech timber only; no resinous timber, like pine or cedar, is at all suitable, as butter is a great absorbent and will acquire a bad flavor if brought into contact with any such substance, or even any odor existing in the air where it is kept. Ignorance or forgetfulness of this fact is the means of a vast amount of butter being almost ruined, by being kept where it is exposed to the foul odors arising from decaying vegetables in cellars. Although the smell may not of itself be disagreeable, like smoked meat for instance, still, when absorbed by the fresh butter, it becomes as a flavor of the butter very offensive; hence too great care cannot be used in regard to the surroundings of our butter if we expect to have a really fine article.

This matter of producing a superior article of butter appears to me so simple, the conditions necessary so few and so easily complied with, that it really seems to me like a work of supererogation to add any thing further on this subject; in fact, should I attempt to elucidate the subject further, I should soon become tiresome, for the reason that it would simply be a mere repetition of what has already been said: therefore, I shall attempt to add nothing further than a recapitulation of the leading ideas to be kept constantly in view by every one who expects to produce a really fine article. First, then, a healthy animal to furnish the milk is requisite; second, this animal should have an abundant supply of good food; third, should at all times be quiet and contented; fourth, the cow should *never* be worried by dogs, overdriven, abused by the milker, or in any other way excited or made angry, but should *always* be treated with kindness and care; fifth, *every thing* used for or about the milk, cream, or butter should be *scrupulously*, *immaculately* clean; sixth, the milk should be set in a clean room devoted solely to that purpose, neither too warm or too cold; seventh, the churning should be performed with the cream at a proper temperature; eighth, the buttermilk should all be removed by working the butter; ninth, the grain of the butter must not be injured by overheating or *overworking;* and tenth, good salt, not exceeding one ounce to one pound of butter, only should be used; and for this purpose I consider the "Onondaga Factory Filled Dairy Salt," manufactured for the Salt Company of Onondaga, of Syracuse, New York, the BEST salt for butter and cheese which can be procured in this country.

I presume it will be expected by very many that I should here give a full, complete and detailed account of the process of cheese and butter manufacture. This I could do, and would do, did I consider it of any practical importance, or that it would be a practical benefit to those seeking for information, and who are unacquainted with the business. But truth compels me to say that, whenever a person wishes to engage in this business, the best, safest, and, in the end, the cheapest course to pursue would be, to take lessons of some good practical dairyman; for, in my humble opinion, a person might as well expect to become a good practical machinist by reading, as a good cheese or butter maker from books alone, without practical instructions. And what I have written is not so much for the benefit of the beginner as for the old, practical dairyman, there being in my opinion a great want among old, practical dairymen of a proper understanding of first principles, and my aim has been through these pages to supply, so far as I might be able, this deficiency; and my advice to all who contemplate entering the dairy business, particularly cheese making, and who have not a practical knowledge of the subject, either to serve an apprenticeship with some good cheese maker, or else secure the services of such a person to superintend their cheese making.

Furthermore, there are already so many treatises extant on butter and cheese making, describing the process of manufacture with so much minuteness, that it seems superfluous to supply another detailed description here.

However, notwithstanding all this, I am perfectly willing, and, upon reflection, I think I will add here a chapter of practical instruction, more particularly, however, in reference to the manufacture of cheese than butter, as I regard that the most difficult as well as the least understood.

This is, emphatically, an age of progress, advance and improvement. The implements, the processes, the ideas of thirty years ago will not do for to-day; that which was the most advanced idea at that time is now old and antiquated, and the person who is content to plod along in the old beaten track where his father and grandfather traveled, although they might be the celebrities of *their* time, will soon find, upon looking up and around, that he is being completely outstripped in the race of life, and is in fact a stranger among his friends, and really belongs to a former age.

These remarks are as true of cheese making as of anything else, and perhaps will apply with even greater force than to any other branch of husbandry. Twenty years ago the manufacture of cheese was pursued by almost identically the same processes that had prevailed from time immemorial, but about that time inquiry and investigation seemed to suddenly pervade the cheese-producing portion of the community, and from that time to the present improvement has steadily progressed. About this time, that is, 1848 to 1850, the first improved dairy fixtures were introduced and the first Dairyman's Association was formed, which was styled the Geauga County Dairymen's Association, of which the writer was Corresponding Secretary. By means of this organization investigation was set on foot, inquiry awakened, and was, no doubt, the prime mover of very many of the new and improved processes and fixtures which were introduced at about that time and a few years thereafter. This organization, however, was not sustained by the dairymen, and improvements were thrown back upon the efforts and support of individuals, but were, nevertheless, not suffered to remain stationary. In 1850 the late lamented Jesse Williams, of Rome, Oneida county, New York, received the milk from a few of his neighbors and manufactured the same into cheese, and thus was inaugurated the first cheese factory, an example which, although others were slow to follow, has finally completely revolutionized the dairy husbandry of the United States, and almost of the world. About this same time a system of cheese factories was introduced in Ohio, commonly known as curd factories, but, owing to several radical defects, this system soon fell into disuse, and is only mentioned here as showing what efforts were made to introduce improvements in dairying.

Between this time and 1860 many improved cheese vats, heaters, curd knives, and other dairy utensils and fixtures were invented and brought out, all of them showing progress and improvement; but it was during the years 1861, 1862 and 1863 that the most radical change was effected by the spread of the cheese factory system first inaugurated by Jesse Williams ten years before. In 1863 the New York State Cheese Manufacturer's Association was organized, and in 1866 its title was changed to that of the American Dairymen's Association. This association has been the parent of several other Dairymen's Associations; one in Ohio, one in Massachusetts, one in Illinois, and one in Canada have since sprung up, and are each and all doing a good work by holding annual meetings, publishing reports, etc., etc.

Through the instrumentality of these organizations immense strides of improvement have been made, until now American cheese stands unrivalled in the markets of the world—many of our best factories producing an article which takes the lead of the best brands in England, whose boast has been that America could not compete with her dairymen in the production of strictly fine, first class cheese. Let us not, however, become boastful and vainglorious over our achievements; for, however humiliating it may be to our pride to acknowledge the truth, the fact is quite plain that the bulk of American cheese is still very inferior in quality as compared with the best.

Now, the reason for this: Although some may claim a difference of soil, locality, and grasses, acounts for it all, still I must say I believe to be almost wholly attributable to lack of skill in manufacture. True, soil, grasses, water, elevation and climatic differences, all have an effect, still, with care and skill in the manufacture, these influences may be greatly modified, if not entirely overcome.

These considerations have influenced me as much as anything to write out the following details of cheese making, hoping thereby to add something to the cheese makers' skill who may choose to peruse these pages.

What has been already said of milk and its properties, its treatment and preservation, need not be repeated here. I will, therefore, proceed at once to the subject of fixtures and apparatus. First, then, a suitable vat is requisite, and I regard no vat as suitable which does not give the cheese maker complete control of the heating, both as regards rapidity of heating and the ultimate duration of the process, being able at all times to control, check or entirely stop the heating, and renew it at pleasure. The cheese vats manufactured by H. A. Roe, of Madison, Lake county, combine as many, if not more, of the desirable qualities of a first class cheese vat as any other vat in use.

The milk having been properly cooled, and in a good state of preservation, that is, sweet and perfectly free from taint or putrid ferment, should be warmed, if the weather be cool, to a temperature of 84 to 86 degrees, Fahrenheit's scale, and if the weather be warm 80 to 82 degrees is sufficient; when a sufficient amount of prepared rennet should be added to produce coagulation in from twenty to thirty minutes. The milk should then be thoroughly agitated at the least five minutes, and after that time gently, until coagulation begins, when it should be covered up and stand quiet one hour, or until coagulation is complete, and the curd has assumed a consistence like good, firm custard. When coagulation has proceeded thus far, the mass should be divided with "Young's Curd Knife" into blocks about three-eighths of an inch square, or about the size of beech nuts.

Begin now to raise the heat, at the same time turn the curd over with the hands, so as to keep it loose and flowing freely about in the whey; raise the heat very gradually, and use no violent motions, but do everything gently; continue to raise the heat until it reaches 96 degrees; then stop the heating; keep the mass well stirred a half hour or so, and then allow it to stand quiet from one to two hours. On the first appearance of acidity in the whey the curd must be drained and salt added at the rate of one pound to every thirty pounds of cheese.

After adding the salt keep the curd well stirred and exposed to the air for a half hour, when it may be put in the press. Press it from twenty-four to thirty-six hours, and remove from the press and place in the drying room, where it should be turned over every day until twenty days old, when it is fit for market.

The preparation of rennet is one of the most important items of cheese making, as it is from the action induced by this chemical agent that the quality of the cheese almost wholly depends. The calf should be at least six days old, and healthy, which may be determined by the general appearance, and by observing the condition, color, and consistency of the evacuations; and should have *only* good, healthy milk to eat, such milk as will be furnished by its *mother*, provided *she* is healthy. The practice of allowing calves to run with cows with still younger calves; in other words, in order to save a few shillings, to take the calf of four or five days old and put it upon a fresh cow, and compel it to eat beselings all its life, is utterly reprehensible, and ought to be severely punished. In fact, too much care can not be taken to have nothing but clean, wholesome, healthy rennets ever used for cheese-making. When it is purposed to kill the calf for the rennet, let it have a full meal of milk at night and none in the morning. After breakfast and the milking and other chores are done, proceed to kill the calf by chopping off its head with an ax. The practice of knocking on the head before bleeding is not to be recommended, as the tissues will be more or less filled with blood when this is done, while if the head is chopped off, the blood will be better removed; and the tissues should be so thoroughly freed of blood that the stomach shall present a white appearance, and it is then easily preserved, while if filled with blood it is more liable to taint. When the skin is off and all is ready, open the calf and find the small intestine leading off from the second stomach, cut it off two inches from the maw; now grasp this end of the intestine left adhering to the maw and the upper end of the second stomach where it unites with the first stomach, with *one* hand, and with a knife cut between the first and second stomachs (the line of division is easily determined by the appearance), and you hold in your hand the "rennet." Turn the "skin" wrong side out, shake and pick off the dirt, if any appear; rub it lightly with salt, and turn it back right side out; tie up one end and then blow it up like a bladder, and tie up the other end and hang it up in a dry place, not too warm.

When wanted for use, take in the proportion of two rennets to one gallon capacity of the crock or tub used for soaking them in, cut them open, put them in the vessel, and fill it up with whey at the temperature of 96 degrees; take the skins up two or three times a day and rub them thoroughly with the hands, and in three days it is fit for use; add a little salt occasionally as you use out and fill up, and you will have no difficulty in keeping your rennet free from taint, so long as nothing but *whey* is used for soaking.

FUTURE IMPROVEMENTS POSSIBLE AND PROBABLE.

It will be recollected that the number of acres of land devoted to dairy farming on the Reserve, as heretofore stated, is 1,133,812 acres, keeping 132,500 cows, or one cow to eight acres. It was further stated that some farms were in so high a state of cultivation as to keep a cow to three acres. What I wish to call attention to is the difference there would be, in case all the dairy farms of the Western Reserve were as productive as these few. We should then have 377,937 cows on the same territory which now keeps only 132,500. Allowing the same rate of product from the increased number as is produced now, we would have $22,668,661.26, instead of $7,948,981.15. Allowing interest on the additional number of cows, and retaining all other items of capital invested, as in a previous estimate, and keeping the number of farms the same, we have a net balance left of $17,434,942.86, and to each dairy farmer $1,973.84, instead of $379.71 as at present, according to the estimate—a difference of $1,594.13 to each farmer in favor of high farming as against low farming.

It may be said that this all looks very well on paper and sounds well in the reading, but will be found in practice to be mere idle, visionary speculation. Let us see. There are *some* farms which will and *do* carry this amount of stock. Then why not others?—in fact, why not all? How is it done? Simply by better and more thorough cultivation. This is all the secret of it. But to do this requires more laborers. Very true, but will it not pay? Let us make the figures. Suppose this high state of cultivation requires the labor of two men to each farm of 128½ acres, in addition to the labor now employed, and at a yearly salary of $500 each, here is $1,000 to each farm additional expense, and to pay it we have $1,594.13, leaving a net balance in favor of high farming of $594.13 to each farmer, or more than once and a half his present income. Nor is this all. Every dairyman knows that the higher the state of cultivation of a dairy farm, and more labor expended in growing root and forage crops, the greater the produce of the cows kept in proportion to numbers. The present average of cheese per cow per annum, on the Reserve, will not exceed 400 pounds, while some of our best kept and highest fed dairies average 600 to 700 pounds per annum per cow. Leaving out of the calculation the higher figures, and assuming that an average of 600 pounds may be reached, our figures will stand as follows: Each farmer would receive, instead of the present income of $379.71, the nice little sum of $2,960.76, leaving a balance in favor of high farming of $2,581.05. Suppose that instead of two hands additional to each farm of 128½ acres being employed at a salary of $500 each, there are four employed at the same rate of salary, we have still a net balance left in favor of high farming of $581.05, to which add present income and we have $960.76, against $379.71 at low farming.

Nor is this all the improvement possible. There is a difference between the market value of the best and poorest butter and cheese of from forty to fifty per cent., and the difference between the average price paid and the highest, is fully twenty-five per cent. of the average price. Let all those who attempt to manufacture butter and cheese become so skilled as to reach the highest price. This gives us an addition of one-fourth to our income; which gives of gross income, after paying interest on capital, of $3,700.75, and a net income, after paying the salary of four men at $500 each, of $1,700.95, or almost five times the low farming income of the present time.

So much for *possible* improvements. We next inquire, What are the *probable* improvements? It was a remark of the immortal Webster, "that we have no better criterion whereby to judge of the future than by the past." And in order to show what has been effected by Ohio dairymen in the way of improvements in the past, I desire to introduce in this place an extract from an article written by myself, some three years since, for the *Geauga Democrat:*

The genius of our institutions tends to develop the industry of the country in a remarkable degree, and in nothing are its effects more plainly seen or more forcibly felt than in the extraordinary development of the agricultural interests. During the past ten or fifteen years, the introduction of labor-saving implements and machinery, the mowing machine, the reaping machine, the grain drill, the horse rake, improved threshers and separators, wood-sawing machines, and a thousand and one minor machines and implements, to lighten the labor and increase the products of the agriculturist, together with the increased facilities for obtaining information furnished by means of the magnetic telegraph, and shortening the time for travel and transportation by means of railroads and steam power, all combine to induce the farmers of our country to adopt and push every means of improvement within their reach. In fact, every intelligent farmer sees, feels and knows that, if he rests contented with that which was all right for his father or even for himself a few years ago, he is losing ground in the great race of life, and that, in order to meet his neighbors and contemporary farmers on terms of equality, he *must* adopt modern improvements.

Associations and combined efforts are also very powerful agents in developing the industry of the country, for the influence of one man, how muchsoever it may be felt and acknowledged within the limited sphere of his own personal acquaintance, except in rare instances, is unseen, unknown and unfelt outside of his own neighborhood; but, when associated and combined with ten, twenty, or fifty others, with common interests and for a common purpose, the influence which such an association exerts is widely felt and acknowledged, and *each* individual may reap all the benefits of this united influence. Hence we see associations springing up all over the country, each composed of individuals having a common interest and a common purpose. In one direction we see a trades-union; in another, a board of trade, a chamber of commerce, a merchants' exchange and a board of brokers; we also find a mechanics' association, a fruit growers' association, a wool-growers' association, a board of iron-mongers, and a grape and wine growers' association, and many others; in fact, each and every special branch of industry must, unless it would be outstripped by all others, be fostered and protected by combined effort and association.

This fact, although it may not be universally acknowledged, is very generally felt, and it is this, I think, which caused the almost universal adoption of the factory system by dairymen throughout the country. It is true other arguments are adduced, such as the enhanced value of the product in the market, the relief to the farmer's family of a vast amount of drudgery, &c.; still, these advantages are truly the legitimate effects and benefits of *association*.

In order more fully to appreciate the benefits which the dairymen of Ohio are deriving from these associations, and their general effects on the price of cheese, it will be necessary to look back, and compare the price of cheese in this State with the price of factory cheese in Oneida Co., New York, during the decade from 1850 to 1860. Every dairyman knows very well that, during those ten years, the price of cheese here on the Reserve, was rarely over six cents per pound; and I find by examining my dairy accounts, that the average price at which our own dairy was sold during the ten years from 1850 to 1860, was a little less than six cents per pound, the price varying from five to eight cents. In 1860, our dairy averaged less than seven cents per pound, and the general average price of cheese on the Reserve, during that season, was not over six cents per pound; while, during this period of ten years, the price of factory cheese in Oneida Co., N. Y., was at no time less than ten cents per pound, and a part of the time as high as twelve and a half. Mr. Jesse Williams informed me in the fall of 1861, that, from the time when he started his factory, 1850, up to that time, he had not made but one sale at less than ten cents per pound, and that it would average over eleven cents for the whole time. Now, to be sure and not overestimate the thing, we will deduct from this one cent per pound for difference in cost of transportation, leaving ten cents per pound as the price at which cheese on the Reserve should have sold during those ten or twelve years, providing that our cheese was equal to Oneida Co. factory cheese; while, instead of that price being reached, the average price of cheese on the Reserve during all that time, was considerably less than six cents per pound.

Now let us look a little at prices as they have ranged during the three years last past, and compare with the price of factory cheese in New York factories. I have now before me reports from twenty-one factories in New York in 1863, that being all that were reported; and their sales average from 11¾ to 12½ cents per pound, and one factory reports an average of sales a fraction over 13 cents. That same season the cheese sold at our factory at an average of $11,983, being a mere fraction less than 12 cents per pound. I have not the statistics at hand to show what were the average sales of other Ohio factories in that season, but I believe they were as high as ours. The New York factory reports published for 1864, show a wider range of average sales, the lowest being 18½ and the highest 24¼. The average of forty-five factories reported is 20¾, and of these only three were as high as 24 cents per pound; eleven factories reported sales, but no average. The lowest sale made by any of these eleven factories was 15¼ cents, the highest 25 cents, per pound. I have no statistics of Ohio factories from which I can give the average price, but I know two factories that made sales as high as 26 cents per pound, and one that made a sale at 27 cents per pound, being a higher figure than reported by any New York State factory. The average price of cheese sold at our factory was 24½ cents per pound, being above the highest average of any New York factory; and I firmly believe that the average price of factory cheese in Ohio in 1864, was fully equal to the average of New York State factories.

Of the sales of cheese in 1865, I can give but a few figures, but I have been in correspondence with parties in Oneida and Herkimer counties, during the past season, and have kept myself tolerably well posted in prices of factory cheese, both there and in Ohio; and, as far as I have been able to discover, the Ohio factories have sold at full as high figures as the New York factories during the season of 1865.

Let us examine this in review. From 1850 to 1862, the price of cheese in Ohio was 75 per cent. below the price of factory cheese in Oneida county, and that, too, after allowing one cent per pound for difference in cost of transportation; while, during the past three years, the price of factory cheese in Ohio has been full as high, allowing the difference in cost of transportation, as it has been at the New York State factories, and it is perfectly clear to my mind that the introduction of the factory system in this State has added 75 per cent. to the price of Ohio cheese. Furthermore, the price of factory cheese in Oneida county in 1860, was 12½ cents per pound, while the price of cheese in Ohio was from 6 to 7 cents per pound, and this was when the country was peaceful and prosperous, and gold at *par*. From this we have good reason to infer that Ohio cheese, had we no factories, would be worth from 6 to 7 cents per pound in gold, or as the premium on gold has been during the past season, about eight to eleven cents currency, while, in fact, as we are all very well aware, the price of cheese here during the past season, has been from fourteen to twenty cents in currency.

That this difference is all attributable to the factory system, I am well aware will be disputed by many; but let us look at the matter a little, and see whether I am correct or not. Previous to the breaking out of the rebellion, nearly all the cheese made on the Western Reserve found a market in the Southern States, while a large portion of New York cheese was disposed of in the Southern Atlantic cities. The opening of the war cut off this Southern trade, and the bulk of American cheese, not being of a quality and style to suit the English trade, prices rapidly declined, and in 1861 and 1862, prices were so low that very large quantities were exported, although selling in England at less than half the price of prime English cheese. By this means we became aware of the demands of the English trade, and all the factories throughout the country tried by every art in their power to produce an article to suit the taste and wants of the English consumers; and the result has been that English shippers would buy none but factory-made cheese, when it was to be had, paying an average of two to three cents per pound more for it than for farm dairy. By this means a large and increasing trade has grown up, and bids fair to continue at remunerative prices to the producer.

To assist in arriving at a clear understanding of the matter, I subjoin a statement of the exports of cheese since 1856, to Great Britain.

The exports in 1857 were but 4,000,000 pounds; in 1858, 5,000,000 pounds; in 1859, 15,000,000 pounds; and, in 1860, 23,000,000. In the first year of the war, shipments were stimulated by the prevailing low prices; so that our exports of cheese amounted, in 1861, to the large amount of 40,041,000 pounds, and, although the price was low, a market for American cheese was opened, and, although the next year our export was not as large, still it amounted to 38,722,000 pounds, showing conclusively that a large proportion was now being sent abroad, and, as might naturally be expected, the export of cheese continued to increase, and in 1863 it amounted to 39,075,000 pounds, and in 1864 to the enormous amount of 50,000,000 of pounds. What the amount is for 1865,* I have no means of knowing, but I do know that it has been very large. Still I am prepared to expect some falling off from the last year, from the fact that the war is closed, and the Southern trade revived to a great extent, and the result has been just what we might have expected in prices, a large proportion of the cheese being made in the factories for the English trade, and the price which English shippers were able to pay being altogether above the views of Southern dealers, a short supply in the Southern markets was a natural consequence, and it was not until the price had advanced so as to be above the price which English shippers were willing to pay, that dealers in our Southern market could obtain a supply, and just so soon as this was the fact, and it paid better to ship to Cincinnati, St. Louis and New Orleans, than to New York and England, the bulk of shipments tended in that direction until those markets were supplied, when prices fell off there, and, at this present time, the export trade is again in the ascendant, and our Southern friends will get no more *factory cheese* until they will pay as much for it as our cousins across the water will; and thus we see that without factories we cannot enter into the English trade with success, and with them we can rely on remunerative prices, and bring prices for our Southern markets up to the standard for the export trade among the best Eastern dairies.

In view of the large increase in prices for Ohio cheese obtained through the influence of factories, the fact that the farmers' families are by this means saved a vast amount of hard labor, that in fact those farmers who patronize factories receive as much net cash as they would to make their own cheese at home, it certainly appears as though this system was destined at no distant day entirely to supersede the old system of making cheese at home. In fact, dairy farmers cannot afford to let this system fall into disuse; it is manifestly for their *interest* to sustain it, and I have no doubt they will.

To the facts and deductions of the above extract I have nothing to add, excepting the exports of cheese for 1865, 1866 and 1867, and nothing to retract. The improvement in quality of our Ohio cheese has fully kept pace with improvements in New York or elsewhere, and Ohio factories are continuing to receive as high prices for their cheese as those of any other State; in fact, cheese now at this present writing—March 12, 1869—is selling at a higher price in gold than *ever* before. Cheese producers recognize the fact that the production of cheese is largely increasing, and that, unless a strictly fine class of goods is produced, there is danger of their going begging for a market. There is, then, at least, *this* necessity for improvement in the quality of cheese, that on a full or a dull market a poor article will never sell but at ruinously low prices, while a gilt-edged article will always sell.

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* Exports of cheese in 1865, 42,000,000 pounds; in 1866, 49,000,000; in 1867, 55,000,000 pounds.

Another probable cause of improvement is, that the cheese factory system is developing a class of cheese makers of superior skill, by reason of the opportunities which they possess for information, as well as the spirit of rivalry that exists between them not to be excelled, and it is fast becoming a special branch of industry, and must, ultimately, like all other trades or professions, be occupied by those only who are peculiarly qualified for the work. And when none but skilled labor is employed in any branch of business whatever, we are fully warranted in expecting the best results. Hence the probability of improvement in dairy husbandry and cheese and butter manufacture is greater in the immediate future than at any former period.

LIST OF CHEESE FACTORIES IN OHIO.

GEAUGA COUNTY.

	Cows.		Cows.
Foote's factory, Bissell's	500	Randall's factory, Chardon	700
Andrews' factory, Bissell's	500	Pope's factory, Welshfield	800
Bartlett's factory, Chester X Roads	600	Randall's factory, Burton	700
Bartlett's factory, Mulberry Corners	300	Hall's factory, Claridon	400
Hood's factory, Auburn	500	Armstrong's factory, East Claridon	700
Odell's factory, Auburn	600	Smith & Upham's factory, Parkman	600
Smith's factory, Ford	600	Armstrong's factory, Huntsburg	700
Freeman's factory, South Newbury	500	Randall's factory, Montville	800
Hall's factory, Fowler's Mills	600	Murray's factory, Montville	500
Murray's factory, Chardon	800	Smith's factory, Thompson	500

PORTAGE COUNTY.

E. B. Higley, Windham.
Horr & Risden, Shalersville.
H. S. Johnson, Garrettsville.
Hurd & Bro., Aurora.
Harmons & Root, Aurora.
T. C. Bradley, Mantua.
I. C. Scram, Ravenna.
H. T. Hudson, Ravenna.

LAKE COUNTY.

S. E. Carter, Leroy, Painesville P. O.
H. N. Carter, Perry.
R. Freeman & Co., Madison.
Hitts, Willoughby.
Bartlett & McKee, South Kirtland.

ASHTABULA COUNTY.

S. E. & H. N. Carter, Windsor.
Lattimer's, New Lyme.
Osborn's, Morgan.
G. C. Dolph, West Andover.
Morley Bro.'s, Andover.
J Pelton's, Wayne.
Wire's, Austinburgh.

TRUMBULL COUNTY.

J. M. Trew, Farmington.
B. H. Peabody, Kinsman.
E. C. Cox, Mesopotamia.
Baldwin's, Fowler.

HENRY COUNTY.

Ridgeville Factory, Ridgeville Corners.

FULTON COUNTY.

Royalton Factory, Royalton.

LORAIN COUNTY.

Camden Cheese Company, Kipton.
Mussey & Viets, Elyria.
Horr & Warner, Huntington.
Magraugh & Whitlock, Wellington.
Snow's, Huntington.
G. H. Van Waguen & Co , North Eaton.
Corning & Hanee, Grafton.

ASHLAND COUNTY.

Drake's, Sullivan.
Clark & Baily, Sullivan.

HURON COUNTY.

Haviland & Cotant, Greenwich.
J. W. Jenne, New London.
Wakeman Cheese Company, Wakeman.

MEDINA COUNTY.

McDowell Bro.'s, Medina.
Fellows, Chatham.
Benedict & Brooker, Litchfield.
Crane & Co., Sharon.
Colbetzes & Co., Spencer.

CUYAHOGA COUNTY.

A. J. Lockwood, Bedford.
J. Q. Lander, Solon.

SUMMIT COUNTY.

Twinsburg Cheese Associat'n, Twinsburg.
Wm. Wilcox, Twinsburg.
S. Straight & Co., Twinsburg.
. Straight & Co., Hudson.
S. Straight & Co., Streetsboro.
Weton & Son, Peninsula.
M. D. Call, Hudson.

ANNUAL ADDRESS,

Delivered before the Ohio Dairymen's Association, at Hudson, Summit county, on Wednesday Evening, February 24th, 1869,

BY HON. L. D. GRISWOLD, OF ELYRIA, LORAIN COUNTY.

Mr. President and Gentlemen: When I received your invitation to address you on this occasion, I was disposed to decline the honor, on the ground of a want of experimental knowledge of the subject to be treated. My knowledge of butter and cheese making is theoretical rather than practical.

I grew to manhood upon an old Connecticut farm, and understood the routine, theory and practice of the farmers of forty years ago. The mild and gentle countenances of the cows I then milked and fed, as well as the lanes through which I drove them to and from their pastures, are indelibly photographed upon my memory.

Though not acquainted with the details of your work, gentlemen, I have not been an inattentive observer of the rise and progress of the great dairy interest of the State, and especially of the Western Reserve. My daily drives through the townships of my own county, and frequent trips through other sections of the Reserve, have given me an opportunity to observe the gradual improvement of your stock, and the improved methods of the manufacture of the products of your dairy. I well remember the time when butter was worth only from six to ten cents a pound in "store goods," and of cheese so little was manufactured that there was no established market price for it. Most of you then lived in log cabins; you were in debt for your farms; your meadows and pastures were covered with stumps, and you went to meeting and market in ox carts or lumber wagons. The changes which have taken place in your circumstances and surroundings within the last thirty years are wonderful, and to a resident of one of the older States would seem almost incredulous. "The wilderness has blossomed as the rose." The Western Reserve,—when compared with the valleys of the Scioto and Miami, was barren and unproductive,—has become the garden of the State. Your log cabins have given place to commodious, and in many cases, elegant houses. Your lumber wagons are still upon the farm, but when you take your wives and daughters to church, or the market town, they ride in comfortable carriages. You are generally out of debt (or ought to be), and many of you have money at interest, or what is better, have some of those much-abused pictured promises of Uncle Sam, called National Bonds. Most of your sons receive a classical, or at least a high school education, while many of your daughters graduate at some of our excellent female seminaries. What is the Aladdin's lamp that has produced all these changes? At the head stands the dairy, aided by the production of your orchards, your forests and your grain-fields. These branches of industry would, however, have remained unremunerative but for the construction of railroads, the work of the last quarter of a century. These great works which have been built in Ohio by private enterprise, unaided by subsidies or grants of public lands, have opened up for you the markets of the world, and doubled the value of your farms.

The origin of the present race of domestic cattle is involved in mystery. While some naturalists contend that they have descended from the *bos bubalus* (the buffalo of Europe and India), others trace them to the *aurochs*, or wild cattle of Germany and Poland. Baron Cuvier is of the opinion that they are identical with a race no longer existing in a wild state, but, like the camel and dromedary, they have yielded to the control of man, and this opinion is founded upon the examination of ancient fossil remains which are unlike any of the existing wild races, but correspond in all respects with our present domestic cattle. Whatever may have been their origin, the present race of European domestic neat cattle is diffused throughout the whole civilized world.

Your calling, gentlemen, is a very ancient, as well as an honorable one. We are told in the Scriptures that "Abel was a keeper of sheep," and we are informed by Josephus that "Abel brought milk and the first fruits of his flocks as an offering to his Creator." If this statement is true, it does not follow that the milk spoken of was derived from the cow, as ewes' milk and goats' milk have been used by some nations in all ages of the world.

We are also informed by the Scriptures that "Jubal, the son of Lamach, who was born during the lifetime of Adam, was the father of all such as dwell in tents and have much cattle."

Of all the tribes of animals which existed before the flood, Noah was directed to take into the ark seven couples of the ruminant animals, while but a single couple of the others were admitted. Coming down in the history of the world, we learn that Abraham, who lived 1900 years before Christ, was rich in cattle; and we are further informed that when he received a visit of angels, "he took butter and milk, and the calf which he had dressed, and set it before them." This is probably the first mention of butter in any history, sacred or profane.

The pastoral life was followed exclusively in patriarchal times. The head of a family or tribe pitched his tents wherever an abundance of grass and water was to be found for his flocks and herds. Whenever the food was consumed, he struck his tents and moved to another location. Some of them became exceedingly rich and powerful. By a union of tribes kingdoms and empires were formed. History informs us that some 1700 years before the Christian era, Egypt was overrun and conquered by a race of shepherd kings, who held possession of the country and governed it for several hundred years. "The patriarchal shepherds," says Watson, "rich in flocks and herds, and attended with numerous trains of servants, acknowledged no superior; they held the rank and exercised the right of sovereign princes; they concluded alliances with sovereign kings in whose territory they tended their flocks; they made peace and war with surrounding States; in fine, they wanted nothing of sovereign authority but the name."

I have, perhaps, devoted too much of your time to the history and antiquity of your calling. I have shown that it is both ancient and respectable. I trust that the remainder of my address may be of a more practical character.

What is milk, and what are its properties as an article of food? The mammiferous animals are such as suckle their young. Standing at their head is the human family. The huge elephant, the tiny mouse, the leviathan of the deep, the ferocious tiger of the jungle, and the timid and gentle sheep, all alike secrete this simple lacteal fluid, designed by Providence to nourish their young during the early stages of their existence; and it may be remarked that the females of all this diversity of animals manifest in a strong degree the sentiment or instinct of maternal love.

What, then, is milk? I remark, first, that it is perhaps the only article of food that contains in itself all of the elements that go to nourish and build up the animal system. It contains the material to build up muscles and bones, and nerves and cartilage and fat. Its casein or curd, which is a nitrogenous compound, contains the elements of the fibrous or muscular structures; the oily or butyraceous portions contain carbon which produces animal heat, and is also converted into the adipose or fatty structure; while the earthy salts held in solution build up the osseous or bony structure.

The milk of the cow, according to recent analyses, contains in one thousand parts—

Water	873.
Butter	30.
Casein	48 2
Sugar of milk	43 9
Phosphate of lime	2.31
Magnesia	.42
Iron	.47
Chloride of potassium	1.44
Sodium and soda	.66

The proportions vary according to the food of the animal, and, with the same food and treatment, vary in different animals. Thus the milk of cows fed upon the still slops in the vicinity of the city of New York contains only 1.5 per cent. of butter, while the milk of cows properly fed contains on the average 3 per cent. Milk mixes readily with water, though it is about four per cent. heavier.

The different portions of milk vary in their weight. The oily portion, which is found, under the microscope, to consist of globules so small that they pass readily through filtering paper, being lighter than the other portions, under favorable conditions of rest and temperature, rise to the surface in the form of cream. The proper temperature for cream to rise readily is from 60 to 70 degrees. If the temperature is much lower, the cream rises slowly and imperfectly; if higher, lactic acid is formed which soon separates the casein or curd from the whey or watery portion. These curds, thus separated by a natural process, were in ancient times made into cheese by pressing out the whey. At the present day our good wives sometimes make these Dutch cheese balls, and, though not rich, they are quite palatable. Vinegar and most of the acids, muriate of ammonia, sugar of lead and many other substances will produce this separation, but it has been found that no substance does it so effectually as the fourth stomach of the sucking calf, called rennet.

As butter making has become an important part of the business of the dairyman, I will occupy a few moments of your time in speaking of that production. I have alluded to the time when butter commanded in the market but from six to ten cents a pound. As made at that day it was all it was worth. The milk was set for cream in the pantry, where cooked and decaying vegetables abounded. Perchance the odds and ends of food left over from several preceding meals, and designed for the pigs, occupied the shelves in common with milk pans. The pantry was left open for the free access of house flies, and hundreds of them became entangled in the rising cream, where, after a protracted struggle, they yielded up their little lives. Their remains were carefully fished out by the good housewife when she skimmed her milk. The cream was finally collected and placed in the churn, and the work of churning commenced. If the weather was cool and the butter did not readily separate, she poured a little hot water into the churn, thus dissolving the butter globules and converting them into oil. When the work was finally accomplished, and she had her butter in the bowl, she washed it over in such a manner as to leave in it at least half the buttermilk, and as salt was worth only a penny a pound, she added as much as she could comfortably work in. In this condition her butter was sent to the market.

At this time, when good butter commands in the market from thirty to fifty cents a pound, people have learned to be more careful in its preparation, though I regret to say a great deal of poor butter now finds its way to market. This results, I think, from the fact that merchants do not make a sufficient discrimination in price between a good and poor article. If they would reject a poor article altogether, or pay much less for it, the evil would, in my opinion, be remedied.

How to make good butter: First, your cows should have good, sweet feed. While the vernal grass makes the best and sweetest butter, you should see to it that your woods-pastures produce no leeks or wild garlic, as their flavor, if eaten by cows in early spring, would be communicated to both the milk and the butter. Perfect cleanliness is indispensable. Your milk pans should be clean and dry. If a particle of sour milk remains in the pans and comes in contact with the new milk, it acts like yeast, and the whole mass becomes speedily sour. Cleanliness should commence at the milking. If the udder of the cow is besmeared with filth from the stable or the pasture, it should be washed before the process of milking commences. If the work is done slowly or intermittently it is sure to be done imperfectly, as the cow is apt to withhold her milk. The milk should be strained as soon as possible, before the cream commences to rise. If you would have the best results, the milk in the pans should not be more than two or three inches in depth. If you would make premium butter, skim your milk in about six hours after it is set. The separation of the cream continues for thirty-six hours or more under favorable circumstances, but it becomes constantly poorer in quality, the cream globules carrying with them to the surface a greater quantity of the casein and water.

The cream when taken from the milk should be put in stone-ware or earthen jars, where it may be kept without injury for three days. When additions of cream are made the whole should be stirred together. Some recommend that a little salt should be sprinkled over the cream. Churning should be done at least twice a week. Hot water should not be put in the churn to heat it before the cream is poured in. It should be of the same temperature as the cream, which should be about 60 degrees of Fahrenheit's thermometer. Of course in hot weather it is difficult to keep the temperature so low without ice, but if churning is done in the morning it will seldom be too warm.

What kind of a churn should be used? There are such a variety of patent churns in the market that I am unable to say which is best. I have no faith in those which claim to bring the butter in two or three minutes. Butter cannot be properly gathered in so short a time, and there must of necessity be much waste. Perhaps the old-fashioned dasher churn, all things considered, is as good as any. In large dairies a power to be operated by a horse, a dog or a sheep can easily be attached. A very good churn consists simply of a square box to be turned by a crank, which any joiner can make. It is the percussion, rather than simple agitation, and the striking of the cream against the angles of the box seems to do the work.

The butter when gathered should be removed from the churn and thoroughly worked with a spatula, rather than the warm hand. Some wash it in cold water, but this is not done by the best butter-makers. A cloth or sponge, or both, should be used to absorb the buttermilk as it comes to the surface. A very good way to remove the buttermilk, and one that should be adopted in all large dairies, is to have a marble-top table. Grooves should be cut around the edges to receive the buttermilk, with a hole at the lowest part to convey it into the vessel below. The butter is placed upon the table and a heavy roller passed over it, which flattens it out thin. A cloth and sponge are then used to absorb the buttermilk, both of which should be frequently rinsed in cold water and wrung. A repetition of this process will soon free the butter from every particle of buttermilk, and this is the important thing in making good butter. If it was done thoroughly and completely, and the butter is properly packed, it will keep for months in a cool place, without change. If imperfectly done it soon becomes rancid and unfit for the table. Salting is the next process. Common salt is entirely unfit for the purpose. Rock or crystalized salt should be used, which of course must be well pulverized. A careful housewife will weigh her salt and butter, and be careful not to use more than an ounce of salt to a pound of butter; three-fourths of an ounce is better. If designed for the home market it should then be made into balls of one pound each, stamped, and it will be eagerly seized by the first customer in search of a good article. Such butter should and will command from two to six cents a pound above the common article. If your butter is designed for home use it should be carefully packed in stone jars and so pressed as to exclude the air. A little salt or brine over the surface is all that is necessary to insure its remaining without change. If designed for a distant market it must be packed in wooden firkins. These are usually made of oak, and as that wood contains tannic acid, the butter is apt to taste of the firkin. This is remedied to some extent by filling the firkin with strong brine, and letting it stand for several hours before packing.

In small dairies the milk room is generally in the dwelling-house. It should be on the north side, if possible, and well ventilated. A gauze wire screen should be attached to the outside of each window, to keep out those intolerable pests, house-flies. Both milk and cream readily absorb unpleasant odors. Nothing should be admitted in the milk room which is in the slightest degree offensive. The most perfect cleanliness is indispensable. A little milk spilled upon the floor, if not immediately wiped up, would be sure to create an offensive odor which, though it might not be perceptible to our senses, would affect the cream.

A farmer who keeps a large butter dairy should have a milk-house detatched from every other building. It should be far enough from the barn to be free from all odors from the stable or yard. If possible it should be near a spring, so that a stream of running water can pass through it. It should contain all the conveniences for butter-making, and should be kept perfectly clean.

One word more on this subject and I have done. You cannot make good butter unless your cows have an abundance of pure water. If they can get only brackish, muddy or stagnant water, its offensive qualities will be communicated to the milk and cream.

I have occupied too much of your time in discussing a subject which you understand perhaps better than I. I proceed to the inquiry: Can anything be done for the improvement of our dairy cows?

I take it for granted that most of our dairy cows are of the native breed. Some of them are of superior quality as milkers. I owned one a few years since that made fourteen pounds of butter, carefully weighed, in a week, soon after calving. I think she averaged ten pounds through the season. She had no extra feed, except a mess night and morning, consisting of lobbered milk, buttermilk and the slops of the kitchen.

Our native cattle, like the American people, are of thoroughly mixed blood. The first cattle brought to this country were probably brought by the Virginia colony in 1608. Several cows were carried there from the West Indies in 1609. History informs us that in 1624 "Edward Winslow having been sent to England as agent for the colony, on his return brought three heifers and a bull, which were the first neat cattle brought to Plymouth." "In 1625 the first importation was made into New York from Holland by the Dutch West India Company." "In 1627 cattle were brought from Sweden to the settlements on the Delaware by the Swedish West India Company." Soon after cattle were brought from Denmark by Capt. John Mason. So that the progenitors of our native cattle came from England, from the West Indies, from Holland, Norway, Sweden and Denmark; and from these varied stocks our cattle have descended. The question which interests us is: Are they the best breed for dairy purposes; and if not, can they be improved?

The expense of keeping a good cow is but little more than that of keeping a poor one. I do not say it is no more, because under like circumstances a cow gives milk in proportion to the food she consumes. A first-class cow is always a large feeder. Her organism seems designed for the purpose of converting the nutriment contained in the grasses and grain which she consumes into milk. But little of it is used in building flesh or laying on fat. Hence a first-class milker is generally thin and not fit for the shambles. But the difference in the quantity of food consumed by such a cow and a poor one is not great. If a first-class cow furnishes milk enough to make 700 pounds of cheese in a season, while a poor cow makes but 400 pounds, the difference being 300 pounds, at 15 cents a pound, would be forty-five dollars, a sum sufficient to pay for the keeping of a cow at least a year and a half. The good cow is worth three times as much as the poor one. If the poor one is worth fifty dollars, the good one is worth one hundred and fifty.

It is a general custom on the Western Reserve, for dairy farmers to sell off their cows to the drover in the fall, and purchase again in the spring. This course may be best in a season like the present, when hay is worth from fifteen to twenty dollars a ton, but I submit whether it would not be best to reserve his best milkers, and whether it would not be more profitable to dry off his poor cows early and feed them sufficient roots and grain to fit them for the butcher.

But I return to the question: How can our dairy stock be improved? I answer, not by using the common scrub bulls of the country, even with your best cows. Ten chances to one the good qualities of your cow would not be transmitted to her offspring. If you put your superior cows to a fine quality of native bull, you will be liable to disappointment. It is only established breeds that are capable of transmitting their peculiar qualities to their offspring, with any degree of certainty.

What is meant by the term *breed*, as applied to cattle? I adopt the definition of Mr. Flint, author of a work on *Milch Cows and Dairy Farming*. "The term breed, properly understood, applies only to animals of the same species, possessing, besides the general characteristics of that species, other characteristics peculiar to themselves, which they owe to the influence of soil, climate, nourishment and habits of life to which they are subjected, and which they transmit with certainty to their posterity. The characteristics of certain breeds or families are so well marked that if an individual supposed to belong to any one of them were to produce an offspring not possessing them, or possessing them only in part with others belonging to the breed, it would be just ground for suspecting a want of purity of blood."

Of these different breeds which have been brought to a high degree of perfection in England and in some sections of this country, I shall speak of only two or three as adapted to the subject under consideration.

First, the Ayrshire: This breed is justly celebrated throughout Great Britain and in this country, where known, for their excellent dairy qualities. In color they are generally red and white spotted or mottled, not roan like the short-horns. They are of medium size, having a small head tapering toward the muzzle; short, small horns; bright, though mild eyes; slim neck; deep, though narrow chest; broad across the hips, the hind being much heavier than the fore quarters. They are believed to have originated by a cross of the Durham with the native cattle of Ayr shire, and have been bred with great care, until they have attained their present prominence.

They excel in the richness of their milk, rather than the quantity. Youatt estimates the quantity of milk at 850 gallons a year, as the average yield of an Ayrshire cow. Three gallons and a half of the Ayrshire cow's milk will make one and a half pounds of butter. This would give a yield of 364 pounds of butter in a year, or an average of seven pounds a week, which at 3s, would amount to $136.50. The first Ayrshire cow imported into Massachusetts "yielded sixteen pounds of butter a week for several weeks in succession, on grass feed only."

Mr. Flint says: "The best milkers I have ever known in the course of my own observation were grade Ayrshires, larger in size than the pure bloods, but sufficiently high grades to give certain signs of their origin."

I am not aware that any thorough-bred Ayrshire stock has been brought to Ohio, but the foregoing facts would indicate the propriety of crossing some of our best native cows with a thorough-bred Ayrshire bull, and I hope some of our enterprising dairymen will soon secure the services of one or more such animals.

The Jersey breed of cattle have been imported to some extent to this country. They are distinguished more for the purity and exquisite flavor of their butter, than for the quantity of milk and butter which they yield.

The Short-horns or Durham breed, have been extensively introduced into this country. This is especially true in Central and Southern Ohio and Kentucky. For beauty of form, for size, rapidity of growth and the facility with which they lay on fat, they are unequaled by any other breed. Some of the herds have been bred for dairy purposes, and they are first-class milkers.

Our native cattle, if crossed with this latter class of short-horns, would leave nothing to be desired. I think grades of this description superior for dairy purposes to Short-horns of pure blood. I consider this the best method of improving our dairy stock.

Of the Herefords and Devons it is not necessary to speak, as they are not adapted to dairy purposes.

How should one judge of a good dairy cow? Such a cow should have a small, fine head, a mild eye, fine silky hair, soft and loose skin, a deep, narrow chest, broad across the hips, and a large though not dependent belly. The udder should be soft and capacious, not fleshy, and not hanging down very low. The teats should be neither too large nor too small, and should be set wide apart. The milk veins, by which I mean the veins extending from the udder forward to the navel, should be large and knotty, as should the veins extending from the udder up the insides of the thighs.

How much dependence is to be placed upon the milk mirror or escutcheon as described by Guenon, I am unable to say. It is based upon certain perceptible spots upon the udder and extending up the perineum to the buttocks, in which the hair grows upwards, instead of downwards. Of this sign Mr. Flint says: "My attention was called to Guenon's method of judging cows some eight or ten years ago, and since that time I have examined many hundreds, and the result of my observation has been, that cows with the most perfectly developed milk mirrors or escutcheons, are, with rare exceptions, the best milkers of their breed."

I have said nothing about the manufacture of cheese, which is really the most important product of the dairy, because all of you understand the subject better than I. I would only say in relation to it, observe the most perfect cleanliness in its manufacture. If you would gain a good reputation, deal honestly with the consumer. Use the whole milk and do not steal from it any portion of its cream. By so doing you will gain a good name, and your cheese will sell at the top of the market.

Is it possible that the business of cheese-making will be overdone? I think not. It seems that we export to England an average of 50,000,000 pounds of cheese, and 20,000,000 pounds of butter annually. With this foreign demand, which will increase if we send abroad a good article, and with the greatly increased home demand, which will follow the return of peace and prosperity to the South, I think there is no danger of a glut in the market.

Permit me to say a few words in relation to feed for your cows. We have had two very dry seasons in succession. Your supply of milk must have fallen off in August and September, more than one-half. Does not this indicate the propriety of your sowing forage crops to guard against such a contingency? If you had sown a few acres of corn the latter part of June or the 1st of July, and fed it to your cows when the grass dried up, you could have kept them supplied with succulent, sweet, milk-producing food, which would not only have kept your cows in good heart, but have kept up a supply of milk, which would have paid you many times over for your extra labor.

How can your old and impoverished pastures be renovated and made productive? I answer, a top dressing of plaster of Paris (sulphate of lime,) ashes, orstable manure, will generally accomplish the object. I remember well, that, when a boy, crossing an old, worn-out pasture in returning from a cornfield where I had been applying plaster, and having a few quarts left in a pail, I sowed it broad-cast as I walked along, and I recollect my surprise the next year in passing over the same pasture, on observing a heavy sward of white clover marking out my path. That same line of clover continued to flourish for years in striking contrast with the barrenness on each side of it. I advise that when your pastures are worn out past redemption, you plow them up, and if you would have them withstand a drouth, plow deep or sub-soil them. Pulverize the soil thoroughly, and in August and September seed them down without any field crop. As it is important that you should have a variety of grasses that will furnish feed through the entire season, the seeds of different varieties should be mixed together. Mr. Flint recommends the following as best calculated to form a good sod:

Meadow Foxtail (Alopecurus pratensis)	1 lbs.
Orchard Grass (Dactylis glomerata)	6 "
Sweet scented vernal grass (Anthoxanthum odorata)	1 "
Meadow Fescue (Festcua pratensis)	2 "
Redtop (Agrostis vulgaris)	2 "
June grass or Kentucky blue grass (Poa pratensis)	4 "
Italian Rye Grass (Lolium Italicum)	4 "
Perennial Rye Grass (Lolium perenne)	6 "
Timothy (Phleum pratense)	3 "
Rough stalked meadow grass (Poa trivialis)	2 "
White clover (Trifelium repens)	5 "
	36 lbs.

The quantity and proportions are designed for an acre. The June grass or Kentucky blue grass does not flourish in the north part of the State, as it does near the Ohio river and in Kentucky. The blue grass region in Kentucky excels in beauty any section of the country I have ever seen. Hundreds of acres frequently in one body of open forest, with the underbrush and decaying trees removed, present the appearance of a fine old English park. A soft green carpet covers the ground even up to the body of the trees, and this continues fresh and green through most of the winter. This is the paradise for thoroughbred Durham stock. The severe drouths of summer and the extreme cold of our winters, seem to be unfavorable for this grass on the Western Reserve.

I cannot close this address without referring to one of the growing evils of the present day. I allude to the tendency of our young men to leave the farm and study a profession, or rush into our cities in order to become clerks and shopkeepers. Farming is not respectable enough to satisfy their ambition. Whenever our young men will carry with them to the farm, the habit of industry, with intelligence and enterprise, they will enjoy the respect of all whose respect is worth having. If they knew the struggles of professional men to establish themselves in business, and the fact that many of them fail of success; if they were aware of the additional fact that more than ninety of every hundred men who enter upon mercantile pursuits, fail in business, they would not be so eager to enter upon these callings. Stick to the farm young men! There is no more useful or honorable calling under the broad heavens.

Another and perhaps a greater evil is the tendency of our young, and I may add, middle aged women to idleness and extravagance in dress. An amount of money sufficient to support an entire family comfortably for a year, twenty years ago, is not enough to clothe one young lady of the present day. They are like the lilies of the field; they toil not, neither do they spin; and yet Solomon in all his glory was not arrayed like one of them. A young man of moderate income cannot venture upon matrimony, because his young wife would have nothing to wear. What can a young lady of the present day do and still maintain her rank in society? She may teach school in country places, but in our cities female teachers are cut by the aristocracy. She may even dawdle over the piano, and do a little fancy needle-work, but if she attempts to make a loaf of bread, or engage in any really useful employment, she loses caste at once. Let fathers and mothers remedy this evil if in their power.

FACTORY REPORTS FOR 1868.

OAK HILL FACTORY—SUMMIT COUNTY.

Amount of milk received, 677,479 lbs. Amount of cheese made, 70,946 lbs.; average amount of milk for one lb. of cheese, 9.54 and a fraction. The greatest amount of milk for one lb. of cheese was in June and July, 10 31-100 lbs. The least amount of milk for one lb. of cheese was in October and November, 8 27-100 lbs. Commenced making April 28th, and closed November 21st. Received milk once a day from April 28th to May 25th; then twice a day until August 21st; then once a day until the first of November; then once in two days until November 10th; then once in three days until the 21st of November. The lowest price sold for, 12 cents; the highest, 15 cents; average price, 13½ cents; average price paid to patrons, 11 cents 9 mills; average number of cows, 210; price for making, $1.85 per hundred lbs., and furnish everything. Have been troubled very little with floating curds in July; have had no difficulty in keeping milk over night by means of water passing through a box of ice, thence under and around the milk. Have used A. G. Bagg's patent heating apparatus with perfect satisfaction to the proprietors and manufacturers. Through the months of July and August was very much troubled with the severe drouth, consequently a greatly reduced quantity of milk for those months. The latter part of September and October, and in November, milk was of a superior quality, as was shown by the amount required to make one pound of cheese.

WELTON & SON.

HUDSON FACTORY, HUDSON.

Season commenced April 14th, and closed November 24th. We made both butter and cheese after May 15th. Number of lbs. of milk received, 1,799,898; number of lbs. of cured cheese made, 184,075; number of lbs. of milk for one lb. of cheese, 9 78-100; we charged $1.75 per hundred for manufacturing and taking care of the cheese until cured and sold, and $5 per hundred for making butter. Number of lbs. of butter made, 5,731. Butter was made from the night's milk only, from the cream skimmed from the vats in the morning. We churned by water power, and used the butter-milk for making cheese. I consider this butter made as so much gained, as we averaged as good a yield from the night's as from the morning's milk, and of equally as good quality. Milk was delivered but once a day till the 10th of May, and twice a day thereafter till the 10th of October, and by some few until the close. We used principally the Onondaga Factory Filled salt and found it invariably good. Rennets used, one to 400 lbs. cheese; average number of cows, 600; we use Bagg's heater, and like it much.

M. D. CALL, *Superintendent.*

STARR & HORR'S FACTORY, HUNTINGTON.

There was received at our factory and manufactured into cheese, 3,430,545 lbs. of milk. From this milk there was manufactured 357,262 lbs. of cheese. The average number of pounds of milk required to make a pound of cheese during the season was 9 6-10. The net amount realized from each pound of cheese, after deducting cost of manufacturing, boxing and collection, during the several months, was as follows:

	Cts. per lb.
April	12.448
May	11.356
June	10.557
July	12.823
August	14.183
September	14.518
October	14.998
November	17.147

The net amount realized from each gallon of milk, making the same deduction, was as follows:

	Cents.
April	13 1-3
May	12 1-2
June	10.839
July	12.483
August	14.655
September	16.736
October	18.486
November	22.760

STARR & HORR.

L. BARTLETT'S FACTORY, CHESTER X ROADS.

The number of lbs. of milk delivered, was 2,664,432; the number of lbs. of cheese made, 267,143; number of lbs. of butter made, 4,446; average yield of butter and cheese, 1 lb. to 9 8-10 lbs. of milk; average price of cheese, $14.36 per hundred as sold.

LUCIUS BARTLETT.

DISEASES OF CATTLE AND THE INFLUENCE OF THOSE DISEASES ON MILK.

BY PROFESSOR JOHN GAMGEE,
PRESIDENT OF ALBERT VETERINARY COLLEGE, LONDON, GR. BRITAIN.

History reveals a truth which is at once deterring and encouraging to men engaged in the arts of peace. In times not yet remote, and even at the present day, the qualities recognized as supreme, as best calculated to secure glory, wealth, and the honor of being ennobled by sovereigns, have been of valor and skill in devising instruments of destruction. According to the views of many, the preservation of peace is best guaranteed by arming to the teeth, and encouraging the manufacture of monster cannons, iron-clads, infernal machines, torpedoes, shells, chilled shot, and so forth. It is true that a learned or influential divine may attain the front rank amongst peers, that distinguished lawyers acquire great wealth and the title of nobility after years of toil which may well be characterized as arduous, but scarcely as growing out of pure philanthropy.

In this free country an effort is made to despise titles, and yet my travels indicate that Honorables, Generals and Colonels, by courtesy, are relatively about as numerous as members of the Legion of Honor in France, and there is a sneaking regard for distinction, which, emanating from a solid sub-stratum of human vanity and praiseworthy emulation, must in the future acquire a bolder and more distinct form.

By all means let us have good works, even at the risk of pandering to some human folly; and above all things, let us hope that a dukedom, a baronetcy, or precedence over hereditary peers dating back to the middle ages, may occasionally be assigned, where such distinctions are prized, to those whose every effort has been directed to making mankind in general happier, healthier and richer than heretofore.

It is true we look to Cæsar as Cæsar, and should laugh at a prefix, should an insane biographer avoid tautology by occasionally calling him His Imperial Majesty. It is likewise true that Harvey, Jenner, Stephenson, Washington, Franklin, Faraday and a host of others, could scarcely have lived longer in the minds of men had they hidden their patronymic under the tinsel of aristocratic titles. But, gentlemen, it is a law of nature that the strong shall master the weak, that the great shall be great and held up as examples to others, who may thus be induced to strive in a like manner; and all I desire is that in the old world as in the new, the public and the rulers of the people should learn that in accordance with the spirit of the age there should be a new classification of the list of public benefactors.

For some inscrutable reason, in by-gone generations, a monarch, a pontiff, a general, each and all have found that to them belonged the true title of greatness, of pre-eminence in their respective countries; but the world should reverence the man or the body of men whose aim is to prevent sickness and to cure it, to feed God's people, and make them truly better, wiser and more peaceable than they were before.

These remarks, gentlemen, will show you how much I feel honored in being selected to deliver the annual address at this meeting of the American Dairymen's Association—started, it may be, as all great things are started, by prudent men in their attempts to make an honest livelihood and be useful members of society, it aims at developing the resources of a country, at economizing one of the most precious of all articles of diet, and at the prevention of much waste, which is the cause not only of money loss, but of actual human suffering. You are engaged in a great and good work, suited to the spirit of the age, and I am not saying too much, should I assert that this Association is a successful pioneer, calculated by its example, no less than by its labors, to encourage people in the path of social improvement.

I esteem it a privilege to have an opportunity of directing attention, this evening, to the great advantages you are likely to derive from encouraging the acquisition and diffusion of knowledge concerning the diseases of lower animals. It is to be regretted that in this great country, with all the inducements offered for the progress of agriculture, no encouragement has been given to the establishment of Veterinary Colleges, or even a single institution devoted to the study of diseases of animals. Dr. John Busteed, of New York, has attempted and accomplished much, and if the Legislature of this State can appreciate the labors of a far-seeing enthusiast in this essential branch of human learning, thirty or forty thousand dollars may yet secure for the State of New York the honor of precedence in creating an American veterinary profession. Dr. Busteed is allied with good men, and they have demonstrated their disinterestedness in undertaking what has as yet proved a thankless task.

Veterinary colleges were founded over one hundred years ago in Europe, with the main object of enlightening people as to the nature and prevention of cattle plagues. France took the lead, and her reward now is a striking contrast with other countries in the losses sustained by the rinderpest during the past three years. In England, until the days of Youatt, the subject of cattle disease was ignored. Steam power and free trade sentiments virtually converted the British Isles into a part of the European continent, so far as the cattle trade was concerned, and whereas for long the ocean had protected the herds and flocks on our evergreen pastures, the hand of time brought facilities of communication with distant lands which have cost us millions upon millions sterling in matchless sheep and cattle. The great benefits of free trade have thus in part been neutralized in our country for want of veterinary knowledge at a time when such knowledge could easily have controlled the disasters which followed.

No better illustration can be had of the limitless character of injury inflicted by a cause which, if recognized at the proper time, would have been most easy of control. Not only did the United Kingdoms of Great Britain and Ireland suffer as the result of Sir Robert Peel's reforms, but Holland, which had been exporting her cattle southward, became a main route to the British markets, and her provinces were soon devastated by the foot and mouth disease, contagious pleuro-pheumonia, and small-pox in sheep. And then both Holland and England began to contribute to cattle plague dissemination. America was one of the first to suffer, and she suffers still. Australia, rising in wealth and influence, has been crippled by the lung plague, and the Cape of Good Hope, with its Dutch and British settlements, has been impoverished by the same disease. I need not refer to minor outbreaks in Sweden, Norway, Schleswig-Holstein and elsewhere, the direct result of the British free trade movement of eight and twenty years since, for without these I can easily calculate a loss to agriculture, an irrecoverable loss to Britain of at least fifty millions pounds sterling, and to the British Colonies and America combined of at least a similar sum. These figures are not purely theoretical. I published statistics as an official report to my government in 1862, proving that in six years we had lost not less than twelve millions sterling from pleuro-pneumonia amongst cattle, and that rate of loss has been kept up since 1842, some years more and some years less. But this does not include the enormous losses incurred by the curable foot and mouth disease, which although rarely fatal, so impoverished stock and destroyed the milk-producing faculties of dairy cows that the farmers of England have lost in cash as much, if not more, by this disease than by the other.

And again, I have not made any allowance for the losses by small-pox in sheep, and the terrible ravages of the cattle plague which visited us in 1865. You therefore see that I should be nearer the mark if I said that England had probably lost one hundred millions sterling during the past twenty-eight years. The farmers of America should not wait to learn this lesson by heart. It so happens that whilst the New York College of Veterinary Surgeons is pining for means in New York, the farmers, I am sorry to say, are feeling the impoverishing effects of cattle disease in many parts of the United States, and it appears to me that in this intelligent country, all that is required is the free publication of facts on all these subjects. It is fortunate that at the head of the Agricultural Department at Washington there is a true son of the soil, who appreciates the vast importance of all these questions, and had he the means at his disposal, I do not believe American farmers would remain long ignorant of the diseases prevailing in America, and the best means to be adopted for their prevention and cure. So little provision has, however, been made here for the consideration of this important question, that Gen. Capron had to ask me last summer, when the Texan fever prevailed, to work for him, trusting to Congress paying me, and my report, written last September, is still in manuscript for want of funds. Now I do not blame Americans or this government for this. This is a wide country, and you have not had the experience in cattle disease which roused the Europeans in the 18th century. Nevertheless, the losses sustained here have been and are enormous, in all probability exceeding one hundred millions dollars in gold every year, and the excitement of the panic of 1868, produced by the American cattle plague, may result in good, and may lead to rational efforts. Let me advise you not to copy England in this respect, but rather to look to France, Prussia, Austria and other continental nations, that recognize it as duty to provide, even from the public purse, for the education of a profession whose special province it is to prevent poverty and famine, for these are the inevitable results if cattle plagues be permitted to disseminate at pleasure.

This country has as yet been visited by only one of the great contagious cattle plagues of the East which have traveled the Old World in the course of civilization, and as history repeats itself, may in a similar manner travel through the New.

The foot and mouth disease, vesicular murrain, or epizootic aphtha, has long been the forerunner of these pestilences, characterized by longer periods of incubation. The width of the Atlantic alone has saved you. But the rapid sixty-day voyages of bygone times have been reduced in length to ten and fifteen days, and who is there bold enough to say that the same distance will not soon be traversed with great regularity within a week? It may be somewhat improbable for some time to come, but it is one of the probabilities of the future.

The great need of American Agriculture is the improvement of its breeds. The materials to a large extent have been imported, but closer relations with Europe will result in the more common transportation of European stock. Any domestic animal is liable to the foot and mouth disease. Nay more, game, especially deer, hares, rabbits and even the feathered tribe, domestic or wild, may and do carry the poison of this loathsome malady long distances. For readiness of propagation it has thus no equal amongst the plagues of animals, and taking all circumstances into consideration it is rather remarkable that it has not found its way here already. Without doubt the reason for this is to be found in the rapidity with which the disease manifests itself and runs through its various stages. The first cattle that brought the malady into the London market lost their hoofs and had to be slaughtered in Smithfield. The animals they came in contact with carried the disease into remote parts of our islands within a week, and from that day to this similar accidents are of constant recurrence.

The poison of this disease is found in vesicles within the mouth, and is discharged with the gallons of saliva secreted daily under the irritation produced by the eruption on the tongue, palate, cheeks and lips. It is also formed in vesicles on the teats and finds its way into the milk, and thus it kills young pigs, calves, and even children that get milk fresh or undiluted. The skin around and between the hoofs blisters, ulcerates, and discharges virus to poison the grasses, roads, stables, and all else the cattle tramp upon. Cattle famish with their excoriated mouths; cows lose their udders from garget, and the lameness incident to the disease of the feet not only deteriorates the stock but is often a very troublesome complication, demanding skillful veterinary aid.

If you go into a market visited by this disease, the feverish and panting cattle stand with hollow flank, or lie obstinately to relieve their painful feet. If you enter a dairy you find the cows lying, breathing hard, frothing at the mouth, smacking their lips, and giving the greatest amount of trouble to all, from the dairyman to the milkmaid, who knows not how to handle the blistered and bleeding teats, and is in perpetual danger of kicks and contagion.

Words fail to convey to you my ideas and those entertained especially by dairy farmers in England and elsewhere, regarding the troublesome and dangerous character of this, the curable plague of cattle.

CURABLE! It is well to emphasize this word, because people unacquainted with bovine pestilences, and quacks born to rob the farmer of his money, are always calling out for or dispensing cures. In Pennsylvania they are "curing" abortion and the hog plague. Thus it is that both are likely to be preserved for future generations, and it behooves every one endowed with a germ of common sense to inveigh against the practice of curing epizootic diseases. It has been my object in England for many years to advocate the practice of exterminating contagious maladies, and but for the short-sightedness of the farmers, and a host of penny-a-liners ever ready to damage a good cause by their ignorance, I should have succeeded long since in insuring protection even to you by ridding the British Isles of every epizootic. That great work required simple means. Although it may not be necessary to add one word to what I have said in demonstration of the importance of preventing the spread hither of epizootic aptha, which is never absent from Europe, you may be interested in hearing something of the disease induced in man by drinking the milk of sick cows, or being inoculated through the skin.

The milk of cows affected with epizootic aptha is probably harmless, unless mingled with the virus as it flows from the vesicles on the teats. This accounts for a difference in results of experiments. When the teats are affected and the udder congested, the milk is strongly albuminous, and curdles on boiling. Professor Hertwig, of Berlin, found thirty years ago that the warm milk induced disease in man. He drank a quart of it daily. On the second day he had slight fever, dry and hot mouth, and itching of the extremities. These symptoms lasted five days, and then the mucous membrane of the mouth and tongue began to swell, and vesicles formed about the lips, cheeks and tongue. The hands blistered, and the blisters scabbed over in about ten days. But these are not the only results in young people, and especially children. They are affected as the young pigs and calves are that die. Vomiting, diarrhœa, and the excoriations of the mouth and fauces, end in death. In large cities the direct relation between cause and effect cannot easily be proved, but there are not wanting facts to show that epizootic aptha may become epidemic, and in this form may very materially aggravate infantile mortality. A brief review of the past may satisfy you that I am not exaggerating the importance of this question. Nearly two centuries since, according to Valentini, severe aptha prevailed in man as well as amongst the cattle in Hesse. Early in the 18th century Steurlin described a malignant catarrhal fever, with or without delirium, occurring amongst young people as the epizootic aptha then raging amongst cattle in Franconia. Human beings and cattle were simultaneously afflicted with this malady and gangrenous angina in Europe in 1763 and 1764. Sagar, in 1764, describes the malady in domestic animals and in man. In 1827, is mentioned a form of inflammatory rheumatic fever with aphthous eruptions of the mouth, or a vesicular skin disease with abscesses and ulcers on the lower limbs, occurring amongst young people in Bohemia, at the same time that the foot and mouth disease occurred amongst cattle. And vomiting and diarrhœa prevailed amongst children in Wurtemburg at the same time, and were attributed by Kolb to drinking the milk of cows affected with this malady. Numerous other observations have been made on the European continent, and people of all ages have been infected with the disease, either by drinking the milk, placing knives or bits of wood in their mouth, after they have been in contact with the mouths of sick cattle, or the discharge from vesicles dropping on to wounds on the hands, or on eruptions of the skin of the arms. Chronic ulcers and thickening of the skin have not been uncommon.

Soon after vesicular murrain was introduced into England, Professor Sewell, of the London Veterinary College, prepared a report for the Royal Agricultural Society of England, in which he alluded to an observation of the disease in man. Mr. Holmes, a veterinary surgeon at Thirsk, in Yorkshire, reported having heard of a few individuals who evinced symptoms something similar to what animals in the epidemic showed, from partaking of the milk; "and I know others," he added, "that partook of the same with impunity." Mr. Karkeek, an able veterinarian at Truro, in Cornwall, writing in the *Veterinarian* in 1841, said he had seen a plain and palpable instance of the disease in the human subject. He had heard of two others, but the one he saw was very distinct. "It was that of a young farmer who exhibited every symptom which characterizes the disease. There were the vesicles on the alae of the nose, at the point and on the sides; and the point and dorsum of the tongue, and on the gums of the upper and lower jaw. There was the constant flow of saliva, the inability to eat or drink anything, either hard or very hot or very cold. This patient (for I attended him as well as the cattle) is an intimate and particular friend, and I had many opportunities of witnessing the progress of the complaint. He informed me that he was first taken ill with what he called a shivering fit, about the hour of bed-time. For some hours after, although warmly covered up, the cold fit continued. By the morning this had left him, and was succeeded by the hot fit. There was a great degree of constitutional disturbance; he had a difficulty of deglutition, his bowels were costive, his nose constantly itching, his tongue and palate dry, and the pulse ranging from 70 to 100, accompanied by great prostration of strength. During the night which succeeded, he could get no sleep, the itching of the nose was increased, and sometimes he had sharp and violent pains in the head and face. The next morning there was a discharge of an offensive matter from his nostrils, and for the first time he observed the vesicles on his gums and tongue. On the next day the discharge had assumed a semi-purulent appearance. He afterwards took some mild aperient medicine, and in about a week or ten days was nearly recovered. I have every reason to believe that the disease was communicated to him from having injured one of his fingers in giving a drench to a cow. The wound had a very unhealthy appearance for some time previous to his being attacked as I have described."

I need not detain you with the history of other cases, although I might relate many which have been brought to my notice in England and Scotland of late years. The point I have to insist on is that epizootic aphtha is the one plague of cattle and other warm-blooded animals which is communicable to man, and that the poisoned milk of affected cows is probably the cause of many deaths amongst children—deaths which medical men have not learned to trace to their proper cause. I have no facts to indicate whether cheese or butter would retain the virus for any length of time, but in all probability they would; and a trustworthy observer assured me some years since that a pudding made with milk from a sick cow, though boiled, produced the disease in a family of five grown persons. This is remarkable, and would need further observations in corroboration.

I trust these remarks concerning a disease which is not yet in America, may not be deemed out of place. It is necessary you should know of dangers ahead, and your only safety is in incessant vigilance and fullness of knowledge.

But let me turn now to a malady which is in the United States, that is the very opposite to epizootic aphtha in point of incubation, duration and result, concerning which I have just furnished a very brief report to the Commissioner of Agriculture. I allude to the contagious pleuro-pneumonia, or as I prefer to call it, the lung plague. It is without exception the most insidious of all diseases, and none but the careful student of history can make out whence it comes and whither it goes. On its first manifestation in different parts of Europe, it has usually been regarded as a common inflammation of the respiratory organs, of non-contagious character, and it has been only after years of research and observation that the leading veterinarians of the world have learned that it is never developed except as the result of communication from sick or convalescent to healthy cattle. The events of the past thirty years concerning the development of this disease in England, America, Africa and the Australian Colonies, has tended to dispel many doubts; but the weapon that was used against me in England, even by Professor Simonds, when I sought legislation to check the traffic in diseased cattle, was that the disease might be due to that mythical principle, atmospheric influences. The people of Massachusetts can tell you the truth in this respect, but they too were unaware that the malady which they successfully cleared out of their State, had been and has been all along in the Long Island dairies, and has spread thence to New York, New Jersey, Pennsylvania, Maryland, the District of Columbia and Virginia. I learned yesterday of the disease having been witnessed at Armenia, in New York State, amongst cattle from Ohio. It is as bad as ever now in some counties in four distinct States, and if some decided and effectual effort be not made to extinguish it, it will surely and disastrously assail the stock of western and southern graziers, and as it has done in Australia, will inflict an irreparable injury on the whole country. Rinderpest moves on more rapidly than pleuro-pneumonia, and kills so fast that it is like an army moving to invade a land. It is visible, and the full measure of the danger incurred is appreciated by the people it is destined to victimize. The lung plague is the assassin that stabs in the back. It is masked, stealthy in movement and strikes only to kill, but to kill by slow poison. You may have heard of the distant but certain death of a man that accidently inhales binoxide of nitrogen. No symptoms appear for weeks, and then ulceration of the air passages, which is inevitably fatal. So it is with lung plague. An ox rubs its nose against an apparently healthy animal of its kind on a road or in a market. Thirty, forty and even sixty days elapse, during which the ox may have been transported ten or fifteen thousand miles, say from London to Australia, as that has been done, and then it is ready to contaminate and kill all the cattle that come within the range of its deadly influence.

How can such a disease exist anywhere on this continent without a tolerable certainty that, sooner or later, it will spread like the thistle and noxious weeds in general wherever circumstances at all favor the transportation of cattle? You would all have been in arms already as the people of Massachusetts were had the West not been a breeding and purely exporting region and had the extreme South not been the cheapest point whence to drive cattle to the North. The movement to and fro in stock is increasing, and especially the movement of cows, and it is certain that the creation of immense dairy districts on the still unreclaimed prairies of the West will create a demand for different stock than that produced anywhere but in the eastern States, and Europe will continue to be levied for improved breeds, and the lung plague once roaming in the broad plains of Illinois, Iowa and other growing States, will establish stations for its future development which few will have the courage to attack. It is easy to stamp a disease out of a farm, a county or State, but this continent is wide, and your only salvation is to strike now, learn all that is to be learned of the whereabouts of the disease and never cease so long as a single case of lung disease can be traced on American soil. Posterity will not thank you. They will only know what the lung plague is if you neglect your duty; but there is a good measure of patriotism in the land, and if you will learn from England's misfortunes, from the blunders of those who have spoken of notes of warning as emanating from alarmists, and if you will act as Massachusetts did, you will soon save to this country infinitely more than the national debt amounts to.

The members of this Association will be interested in knowing that in this, as in other countries, the lung plague always finds most frequent opportunities of introduction on dairy farms, and in the sheds of town dairymen than elsewhere. You are the first people to suffer and to suffer most severely, so that it is to your direct interest to stimulate inquiry and energetic action. Congress should be moved and funds provided for the working of a national commission which should labor to ensure the cooperation of the several States at present implicated, and should continue its work until there is nothing really left for it to do.

The lung plague not only harrasses the dairy farmer and checks the supplies of milk, but it largely contributes to encourage the traffic in diseased animals and diseased animal produce. The flesh of cattle dying of this disease is innutritious, if not absolutely poisonous, and in all probability favors the development of boils and carbuncles on those who par-take of it. The milk is much diminished in quantity, and has an acid reaction, is thick and curdled. When the cream is removed the milk is thin and blue. Analyses of the milk have shown that it contains about seventy-five parts of water, ten of butter, ten of casein and insoluble salts and part of one per cent. of sugar and soluble salts, to the one hundred parts. This analysis does not, however, indicate the properties which undoubtedly render it improper food for infants and children whose main article of sustenance should always be of the purest and healthiest description.

The field of inquiry into the nature and prevention of cattle disease is not limited to contagious plagues of the kind I have spoken of. There is a vast amount of work to be done in the study of indigenious American maladies. We know little or nothing of the characteristics of the principal diseases destroying your stock, and reliable information can only be acquired by skillful observers, at great cost, and engaged in careful research for a considerable period of time. On arriving in America one of the first questions asked me was, "what is the common cause of abortion in cows?" I told Professor Dalton, as I had explained to others, that the essential element in the production of wide-spread accidents of this description in Europe was ergotism, and that a botanist should be employed to collect evidence as to the extent of this disease in plants. I believe this advice has been acted on, but I know not with what result, and since I have been specially requested to say something on this scourge of dairy farms it may be somewhat interesting for you to know under what circumstances the premature birth of animals in general but especially of calves has been witnessed in the old world. The disease has, indeed, been epidemic as well as epizootic at one and the same time, and especially in ancient times, when a pastoral people, living in the greatest simplicity amongst their herds, were liable to be affected by influences which proved deleterious amongst their animals. As far back as 278 years before Christ we are told that abortion was both epidemic and epizootic in Rome and its vicinity. Few, however, are the records of similar outbreaks until the beginning of last century. In 1720 wet was followed by an abundance of smut, rust and probably ergot in the fields. We are told by Koliser that grains and grasses were diseased, and as a result cows failed to bear their young to the full period. The year 1721 is also described as remarkable for mild weather at first, a damp spring, summer and autumn. Vegetation grew diseased and the domestic animals in general experienced the greatest suffering from abortion and difficult labor.

There is one malady which is a sure indication of damp seasons and unhealthy pastures. It is the rot of cattle and sheep. A form of weakness and emaciation, with tendency to dropsy, due to the ravages of the fluke or distoma hepaticum. Vast numbers of sheep died of this disease in France in 1761, intermittent fever was rife amongst human beings, and the mortality of unborn calves was great.

Swine, as well as cows, suffered severely from abortion in Germany in 1777, and we have distinct evidence of rust and ergot having prevailed to a great extent at the same time.

A long and cold winter followed by the rapid growth of plants in a humid soil, caused the production of fodder in July, 1764, which led to mares as well as cows expelling their young long before maturity.

Toggia, one of the oldest and best writers on the diseases of cattle, describes a wide-spread outbreak of this description in Piedmont, which occurred in November, 1792, and he remarks that it is extremely difficult to prevent such accidents amongst cows in wet countries where the dews in autumn are abundant and cold; and that cows removed from a dry to a wet country are very liable to become subject to the disease.'

In 1831 forage was very bad in Westphalia, and ergotism common there and other parts of Europe. This did not fail in the development of premature labor amongst cows. Precisely similar observations were made in 1839 in France, Bavaria and Lithuania.

In England my attention has been often directed to this question, and, although there have been isolated outbreaks on farms, which could be traced to other causes than the presence of ergot in the grasses, as a rule this was the active agent in the production of the disease. Professor Tanner, of Birmingham, contributed an article in 1858, on ergotism as a cause of abortion, to the Edinburgh Veterinary Review, and he remarked that he had been led by experience and extended observation to regard the connection between the two conditions as close and almost constant.

Now, although in speaking of ergot, it is usually supposed that allusion is made to ergot of rye, there are many plants liable to be attacked by the parasite. The parasite of the rye is a fungus described as an elegant sphæria, and called by Fries cordyliceps purpurea. There are different species of cordyliceps, and the list of grasses and other plants affected with ergot is quite extensive. I am not in a position to give you a complete one, and indeed this subject demands earnest and prolonged investigation, which I trust the remarks I have to make may prove.

Ergot is common on rye, on maize, and is sometimes seen on barley, wheat and oats. In addition to these, we have it on Triticum Repens, Tr. Junceum, Elymus arenarius, E. maritimus, E. Europaeus, Lolium perenne, L. temulentum, Alopecurus pratensis, A. geniculatus, Phleum pratense, Phalaris aquatica, Ph. Canariensis, Paspalum setaceum, Panicum miliaceum, Holcus lunatus, H. avenaceus, H. spicatus, Agrostis stolonifera, Arundo arenaria, A. cinnoides, Phragmites communis, Aira cœrulea, A. cristata, A. cæspitosa, Arrhenaterum elatius, Sesleria cœrulea, Poa fluitans, Molinia cœrulea, Fsecuta duriuscula, F. hordeiformis, Dactylis glomerata, Bromus secalinus, B. mollis, Scirpus palustris, Heilocharis palustris.

A knowledge of the nature of plants thus invested proves that they are apt to grow on low lands, in valleys, on ill-drained or marshy soils, and always best during moist seasons. If history in Europe teaches us anything, it is in such localities and during such seasons, that the females of domestic animals are incapable of regular gestation. Now, I know that one of your most common grasses, Poa pratensis, is often ergotized. That in times past, and perhaps still in some localities, it has produced gangrene in cattle, and that it often constitutes a main element in the hay which has been cut and housed on old pastures late enough in the season to ensure such a state of inflorescence as to favor the development of ergot.

It is not my desire to convey to you that ergotism is the only cause of the troubles that have afflicted many dairy farmers in New York State and Pennsylvania, but I am convinced it is the main one, and every effort should be made to disseminate a knowledge amongst farmers of the nature, varieties and development of this kind of fungus.

It has been stated, with justice, that ergot often fails in producing its specific effect on animals. Fortunately this is so; whilst nature has provided for the preservation of all that is alive, it has also supplied the means whereby the balance of power between the animal, vegetable and mineral kingdoms may be sustained, even though that should entail the destruction of the more highly organized or richly endowed of human beings.

In England grasses on which cattle have grazed in summer will, in a humid climate, become ergotized, but, according to Professor Tanner, it is not produced before the end of July, or early in August. When grasses are cut early and followed by an abundant growth, so as to insure an early autumn mowing, ergotism prevails. After September ergot rarely develops injuriously. The more northern parts of Europe are more severely affected with ergotism than central or southern Europe, and I suppose this applies pretty much to this continent.

Ergot differs greatly in strength according to its conditions and the period of its growth. When first sprouting it is harmless, and it is specially poisonous when attaining maturity. Should it then ferment its power is completely lost, and the same effect is produced by prolonged exposure to a high temperature, such as that of boiling water. This accounts for contradictory observations regarding the action of ergot.

When ergot is not the cause of premature birth in animals, we find especially in the case of cows that accidents operate, and when they have suffered once they are extremely liable to suffer repeatedly. There is no doubt also that some cows are apt to become excited and made to expel their young by being placed with other cows liable to the same condition. I need not, however, enter into details with which most or all of you are conversant. I have simply to state that it is my opinion that in Europe, and probably here, the most frequent cause of abortion is ergotism. The means of prevention consist in excluding animals that are known to be liable to the disease, draining lands, ploughing deep, turning up of old pastures, the grasses in which are affected with ergotism, and sowing other grasses thickly. I expect you will reap great good from investigations which are being pursued at present, and I think Professor Dalton's first report is admirable in showing that many circumstances supposed to influence the development of the disease do not operate prejudicially on cattle. By this process of elimination we often learn the truth, and if you will persevere in encouraging proper inquiry, your reward will be freedom from this and other diseases.

It would be well for America if the example of this State in appropriating money for the investigation of such a disease were widely followed. You need good veterinarians, and such an association as this should encourage the emigration from England or other countries of some of the best men to bring to bear a full knowledge of veterinary science on all questions in which such knowledge can benefit agriculture. The prevention of disease implies, in many instances, good farming, and, although farmers cannot individually control the spread of a contagious plague, you will find there are few diseases which cannot be prevented by proper precautions at home. Did time permit, I could readily prove to you that where British agriculture is most advanced there diseases of animals are most rare. Here it is supposed that cattle diseases are becoming more common. It is true that the lung fever and the Texas plague have naturally swelled the mortality lists lately, but indigenous affections recede as a rule just in proportion as drainage, effectual scarification of soils, the intelligent use of artificial manures, and the proper management of domestic animals are appreciated and practiced. This alone, I trust, is sufficient to direct attention to the proper cultivation of the veterinary art; and, in conclusion, I have only to repeat that with the means at your disposal now, not a day should be lost in urging on the Government the great importance of ridding America of the lung plague. This is too serious a matter to be delayed, and if members of Congress and others should suppose that a malignant disease ought to have stimulated people already in the good work, whereas, unfortunately, few have heard of the disease, let them apply to the farmers of Westchester, Pennsylvania, or secure trustworthy reports from the Long Island dairymen, and then remember that a single case of lung plague unearthed is worse in its ulterior effects on this continent than all the other cattle diseases put together.

MADISON COUNTY CATTLE AND HORSE SALES,

From July, 1868, to July, 1869—148th to 160th Sale inclusive—Reported from Official Records.

BY IRVING F. WILLIS, LONDON, OHIO.

One Hundred and Forty-eighth Sale—Tuesday, July 7th, 1868.

CATTLE.

THREE-YEAR OLDS.

No.	Weight.	Price.
30	1200	$70 00
28	1100	63 00
10	1200	70 00
11	950	47 00
20	1150	69 40
12	1100	59 00
111 Averaging	1130	$65 55

TWO-YEAR OLDS.

No.	Weight.	Price.
43	750	$30 00
14	900	55 30
11	700	30 00
32	650	30 00
42	700	34 50
16	600	25 40
2	750	45 00
20	600	31 00
11	850	44 25
6	600	22 50
9	800	30 50
12	680	41 00
1	1200	40 00
14	720	26 00
11	780	22 00
47	750	31 25
22	600	30 00
17	900	40 00
330 Averaging	718	$33 21

ONE-YEAR OLDS.

No.	Weight.	Price.
7	350	$22 00
12	400	25 00
11	600	30 00
4	350	15 00
34 Averaging	450	$24 82

475 of three, two and one year olds above, averaging round 795 lbs., $40.20.

OXEN—YOKES.

1 pair	2500	$215 00

MILCH COWS AND CALVES.

1 and calf	1200	$85 00
1 "	800	40 50
1 "	800	51 00
1 "	900	43 75
1 "	900	40 00
1 "	900	41 00
1 "	950	45 00
7 and calves, av.	921	$49 43

DRY AND FAT COWS.

2	1200	$40 00
2	1100	43 75
4 Averaging	1150	$41 86

Number of cattle reported.......495 head.
Amount of cash sales.............. $20,000

REMARKS.

This "Sale's Day." will long be remembered for the extreme heat attained not only on that, but many other July days of 1868. At 11 o'clock A. M., thermometer indicated 95 degrees in shade. The crowds of people, as well as numbers of cattle kind, were of course less than would have been under a more bearable temperature. Selling "on 90 days" was the rule, to close out.

Prospects for an abundant hay crop, and closeness of money market, with a general feeling of business depression, tended to make bidding drag. However, the sale was a fair one; yet quite a large number of cattle were withdrawn; else held out of market for better prices.

One Hundred and Forty-ninth Sale—Tuesday, August 4th.

CATTLE.

Three-year Olds.

No.	Weight.	Price.
20	850	$40 00
5	1100	47 00
23	1000	42 00
20	1125	69 40
68 Averaging	1000	$50 00

Two-year Olds.

No.	Weight.	Price.
1	1000	$59 50
13	800	36 05
8	850	42 00
3	650	21 00
19	550	24 70
14	800	35 00
58 Averaging	725	$29 45

One-year Olds.

No.	Weight.	Price.
22	500	$20 45
16	650	33 00
5	350	13 00
25	600	27 25
68 Averaging	560	$25 00

191 head of three, two and one-year olds, averaging round 776 lbs., $35.70.

Oxen—Yokes.

No.	Weight.	Price.
1 pair, 2 yrs	1300	$100 00
1 pair, aged	3150	185 50
1 pair, 3 yrs	3000	100 00
1 pair, 2 yrs	1400	84 75
1 pair, aged	3250	198 50
5 yokes, av'g	2220	$142 19

Milch Cows and Calves.

1 and calf	900	$34 75
1 "	900	38 00
1	1000	50 00
3 and 2 calves, av.	933	$40 92

Dry and Fat Cows.

2	850	$16 00

Heifers—Two-year Olds.

6	550	$20 30
6	350	15 00
2	600	24 75
14 Averaging	472	$18 67

BULLS.

1 1-year	200	$10 00

Number of cattle reported........223 head.
Amount of cash sales................$8,000.

REMARKS.

The telegrams received this 11 A. M. from New York, respecting *that* cattle market, were most disheartening to our stock men "on sale," and had an influence to retard and decline offerings in open market.

With over 7,000 cattle East (the largest number in market at any one time for the past two years), and prices down from *one* to *one and a half cents per pound*, it is convincing to all, that "the Great West" is not out of stock by any means.

The fact is, the whole country is full of A No. 1 corn-fed cattle, bought last summer and fall at from 8 to 9 cts. per lb. As a result, the cattle have *cost* more than they will now *command*, and those who sell *first* will realize *best* prices.

Some 7,000, or more, head are yet held in our county unsold, while other sections have *thousands* more; and as it "will not pay" to hold over and feed again, all must go forward soon, at "going rates."

These facts caused a prudent withholding of bids in our market to-day.

though most of those offered were sold, at a decline, except some 300 head of lousy, scallawag Texans, that have much age and more horn, and are not desired on our blue-grass ranges at any price.

There were several new sellers in town to-day, but Madison's men were so busily engaged in hay-making (which is late, having been retarded by late rains), that not the usual numbers came out. Corn promises well, and hay was never better.

The one hundred and fiftieth cattle sale, which should have been held on Tuesday, Sept. 1st, was postponed, by the almost unanimous consent of our stock-men—in public meeting—on account of the great danger of infection to our herds, by the bringing in of foreign cattle, which might have " the Texas cattle plague" in their systems.

The stock sold at our sales, are many of them shipped by rail from Chicago, St. Louis, and other points of the West, while many others come from the neighborhood of Richmond and Connersville, Ind., and from the north-west of our State.

During August, this plague having broken out among the neat stock of the West, much excitement was caused among our people in not only this but other sections of Ohio, and to prevent as much as possible the spread of the contagion, it was thought best to interdict the sale of cattle, as it had been done, by bringing them together from infected districts; hence the closing of our sales during this month of September. We are most happy to add, that no serious loss of cattle in our county resulted from " the plague."

One Hundred and Fifty-first Sale—Tuesday, Oct. 6th, 1868.

CATTLE.

THREE AND FOUR YEARS OLD.

No.	Weight.	Price.
15	1250	$74 00
3	1500	100 00
19	1400	89 00
37 Averaging	1348	$83 80

TWO YEARS OLD.

8	1100	$48 75
10	1000	48 50
25	1125	62 80
22	875	30 45
5	900	39 75
13	1000	47 10
83 Averaging	1008	$47 39

ONE YEAR OLD.

7	600	$25 71
20	800	37 00
19	650	28 50
2	700	30 00
33	600	30 00
81 Averaging	603	$31 00

201 head of four, three, two and one-year olds above, averaging, round, 907 lbs. $47.50.

OXEN—YOKES.

No.	Weight.	Price.
1 pair	3000	$190 00
1 "	2600	175 00
2 yokes, av'ging	2800	$182 50

MILCH COWS AND CALVES.

1 and calf	800	$33 50

DRY AND FAT COWS.

1	950	$30 00
1	1100	44 75
2 (old)	750	15 00
2	1000	26 00
1	700	27 00
7 Averaging	893	$26 27

BULLS.

1 (2 yrs)	800	$60 00

No. of cattle reported above.....214 head.
Amount of cash sales $10,200

REMARKS.

The numbers in market, though not large, were in excess of anticipations; 300 head were brought in—two-thirds only sold. Farmers all very busy cutting corn, hence buyers were not numerous. More than this, many feared "the terrible Texan plague," and that animals offered *might be* infected, and endanger home herds.

Feed is over-abundant and must be consumed, and to our mind, a golden opportunity to purchase stock has passed to-day.

Hogs are scarce and high, and cannot be gotten in large numbers.

Home buyers are offering from 60 to 70 cents per bushel for corn, to be delivered *right off*, but these prices cannot be maintained when the bulk of this grain is marketable.

One Hundred and Fifty-second Sale—Tuesday, Nov. 10th, 1868.

CATTLE.

Three Years Old.

No.	Weight.	Price.
16	1250	$72 50
6	1100	60 00
10	1300	63 75
32 Averaging	1240	$67 44

Two Years Old.

No.	Weight.	Price.
26	1050	$47 75
16	900	38 30
10	950	43 50
20	875	40 05
16	675	24 50
20	900	36 00
4	800	34 00
20	1200	67 80
16	900	31 00
12	850	33 50
22	900	50 06
35	800	28 00
20	1100	60 00
8	650	24 75
5	1000	40 60
20	800	34 00
30	1100	60 00
15	1100	61 00
9	700	22 00
19	950	35 00
14	800	33 00
100 (Private tr.)	900	40 00
457 Averaging	900	$40 00

One Year Old.

No.	Weight.	Price.
12	700	$12 00

501 head of three, two and one-year olds, averaging, round, 920 lbs.—$42.18.

Calves.

No.	Weight.	Price.
3	400	$12 00

Oxen—Yokes.

No.	Weight.	Price.
1 pair (1 yr)	1200	$50 00
1 " (old)	2800	126 00
1 " (3 yrs)	2400	160 00
1 " (2 yrs)	1600	103 50
1 " (2 yrs)	1800	105 00
1 " (2 yrs)	1800	125 00
1 " (5 yrs)	2600	105 00
7 yokes, aver'g	2043	$120 72

Dry and Fat Cows.

No.	Weight.	Price.
1	1150	$56 10
1	1050	43 75
1	1300	53 25
1	900	36 00
1	800	31 00
1	800	23 00
1 (old)	700	9 20
1	1100	49 25
1 (old)	1000	20 00
9 Averaging	978	$38 08

Heifers—One Year Old.

No.	Weight.	Price.
1	650	$20 00

Bulls.

No.	Weight.	Price.
1 (2 yrs)	800	$25 00

No. of cattle reported............ 530 head.
Amount of cash sales $22,150

REMARKS.

Early hours indicated low prices and slow sales; later in the day *all* buyers seemed anxious, and prices were better than early in the morning. Most of the stock was of *two*-year olds, and about *half of these ages* were from Greene county. Work oxen were all snatched up, and four times as many more were wanted.

Our market to-day is relatively higher than the New York fat cattle market; yet the abundance of grass, corn and hay induces stock-men to invest and risk an advance, ere spring.

(In this parenthesis we wish to sandwich an account of a private sale, during past few days, of Mr. George Linson, of Paint Tp., in southern part of county, who was removing to L., and had an auction sale to dispose of his well-bred stock. We consider prices good, and desire to offer them for permanent record:

41 head of *two*-year old cattle, weight 1250 lbs., sold at $80 per head.
1 two-year old Short-horn heifer, sold to D. Selsor, "King of cattlemen," for $450.
1 of same age for $350.
1 one-year old heifer for $165.
1 Short-horn bull calf for $100.
8 milch cows ranged from $77 to $105 each.
1 pair *yearling* mules sold for $224.
1 *yearling* Black Hawk Morgan colt for $120.
15 head Berkshire pigs, weighing 80 lbs. each, for $12.50 per head.

Ordinary, good grade sheep sold at $4.50 per head, and lambs at $3.00 each.

This sale amounted to some $8,000, and is a sample one of several large ones held during past few weeks.)

One Hundred and Fifty-third Sale—Tuesday, December 1st, 1868.

CATTLE.

THREE YEARS OLD.

No.	Weight.	Price.
14	1200	$71 00
20	1275	70 25
2	1400	83 75
36	Averaging...1253	$71 28

TWO-YEARS OLD.

No.	Weight.	Price.
12	950	$49 50
5	925	47 55
12	850	31 20
4	1000	52 60
6	900	40 00
4	1100	30 00
3	650	20 00
19	1150	60 25
41	1050	61 25
9	850	35 15
6	650	22 00
24	1050	53 00
4	1050	52 25
40	1062	62 75
16	1050	58 50
11	900	$30 25
10	950	44 00
226	Averaging...1000	$51 50

ONE YEAR OLD.

No.	Weight.	Price.
20	800	$40 25
17	650	30 00
14	600	25 00
12	650	27 10
15	750	34 80
14	650	28 60
3	800	25 40
15	500	15 75
19	650	26 00
26	700	33 50
9	600	18 60
2	600	23 25
11	700	32 00
5	475	13 00
15	750	33 25
197	Averaging... 670	$29 00

459 head of three, two and one-year olds, averaging round, 875 lbs.—$43.40.

CALVES.

No.	Weight.	Price.
4	500	$20 00

OXEN—YOKES.

1 pair, 2 years	1600	$96 50
1 " "	1800	110 00
1 "	2600	169 50
1 "	2400	160 50
1 " good	2800	225 25
1 " aged	2200	132 00
1 " "	2600	121 00
1 " 2 years	2190	131 50
1 " 3 years	2800	195 00
1 " 2 years	1800	125 00
1 " "	1800	117 00
1 " "	1600	105 00
1 " 1 year	1300	55 00
1 " 3 years	2770	193 90
1 " "	3000	170 00
—	——	———
15 yokes, aver'g	2217	$141 10

DRY AND FAT COWS.

No.	Weight.	Price.
1	1300	$44 50
1	700	$30 25
1	750	34 75
1	1150	48 00
—	——	———
4 Averaging	975	$39 62

BULLS.

1 aged thoroughbred, at	$100 00

SHEEP.

24 head com.	$2 00
306 " " Guernsey county	2 30
—	———
330 head, averaging	$2 27

HORSES.

10 at ....$110 to $250 each.

No. of cattle reported	500 head.
" horses "	10 "
" sheep "	330 "
	———
Total of stock	840 "

Amount of cash sales, $24,850.00.

REMARKS.

This *first* day of Old Winter's reign was ushered in by snow last night, and 'twas the first of the season; the flakes fell fast until noon of to-day.

Corn, hay and rough feed being abundant, large numbers of both buyers and sellers met this closing sale month of year, as usual.

The sales opened lively, and most lots were closed out, at advancing rates.

The average quality of stock was good, but not often does *every lot* " go off " at as A No. 1 prices as during to-day.

The Messrs. Renicks, veteran feeders, from " The River," were looking for their usual supplies, to fill up their feed lots.

Messrs. Marshall, Turnbull & Co., of Greene, had in over 100 head of *good* cattle, and all were closed out.

Eastern horse-men were purchasing, and paid good prices (up to $250) for " heavy drafters."

The only thing dragging to-day, were young, poor, and poorly broken work oxen. Good, large, well-broken cattle were wanted, and it is almost impossible to overstock a November or December market with this class. The *good* ones brought over *eight cents per pound.*

Good stock-cattle have brought better prices at these Madison county cattle sales, than AT ANY OTHER MARKET ON THIS CONTINENT. We challenge a comparison. Look at the figures. Madison county *pays a higher valuation on her horned stock than any other county in Ohio;* and perhaps in this country. Last year it was $40.57 per head, for all ages. The average of *all* the cattle in Ohio was but $21.79 per head.

Of horses, our average taxable valuation was but a fraction less than

$87 per head; considerably above the State's average, which was but a trifle above $69.

We offer as a reason of this proud superiority, *our blue grass*, which is indigenous, and will pasture more stock per acre than any other grass. Permit a few *facts* in proof. For some half a decade of years, our "Cattle King," David Selsor, has sent *the* premium beef to Gotham's epicures. His usual two cars go forward next week—22 cattle, but three and four years old, weighing nearly *a ton and a quarter* at home, each.

The Gwynne Bros. have just sent off a large lot of three-year olds, weighing near 1,800 lbs. at home.

Jno. Weaver has sold 80 head of his grazing, averaging 1,800 lbs. each, and bringing him over $150 per head at home.

"We challenge the world" to equal our cattle; they cannot be excelled.

Two-year old cattle, last month, averaged $40; this month, $51.50.

One-year olds, last month, were $37, and this month, $29.

The former advanced, and were wanted to feed.

All in all, the sale was a good one, and shows improvement, at this close of 1868, a noted year.

Recapitulation, last six months of* 1868, *showing the number sold (as per report) of each age and kind, and the total number of cattle, all ages, with the total number of stock of all kinds.

	CATTLE.													OTHER STOCK.				
Last six months of 1868.	Three years.	Two years.	One year.	Total of three, two, and one years.	Calves.	Oxen—yokes.	Milk cows and calves.	Dry and fat cows.	Three year old heifers.	Two year old heifers.	One year old heifers.	Bulls.	Total all cattle.	Horses.	Mules.	Sheep.	Hogs.	Total all stock.
July	111	330	34	475	..	1	7	4	....	....	....	....	495	..	..	....	..	495
August......	68	58	68	191	..	5	3	2	....	14	....	1	223	..	..	....	..	223
September* .	....	....	....	....	..	....	....	....	....	....	....	....	....	..	..	....	..	....
October	37	83	81	201	..	2	1	7	....	....	....	1	214	..	..	....	..	214
November ...	32	457 41	12	501	3	7	8	9	....	2	1 1	1 1	539 53	1	2	500	15	530 571
December ...	36	226	197	459	4	15	....	4	....	....	....	1	500	10	..	330	..	840
Total.....	284	1195	392	1827	7	30	19	26	....	16	2	5	2015	11	2	830	15	2873

* Cattle plague—sale postponed until October.

Table showing the average prices of the different ages of cattle (with average weights,) and the average price per head, of all ages, separately; also, average of three, two, and one year old cattle, together, for each month of last six of 1868, *and total average for the time of all kinds; with the addition of the averages of all other stock reported monthly, and total for the last six months of* 1868; *also, amount of cash sales monthly, and total.*

Last six months of 1868.	CATTLE.													
	Three yrs—lbs.	Three yrs—price.	Two yrs—lbs.	Two yrs—price.	One yr—lbs.	One yr—price.	Three, two, and one yrs—lbs.	Three, two, and one yrs—price.	Calves—lbs.	Calves—price.	Oxen, yokes—lbs.	Oxen, yokes—price.	Milch cows and calves—lbs.	Milch cows and calves—price.
July	1130	65.55	718	33.21	450	24 82	795	40.20	....	.. ..	2500	215 00	921	49.43
August	1000	50.00	725	29.45	560	25.00	776	35.70	....	.. ..	2220	142.19	933	40.92
September*	....	.. ..	....	.. ..	....	.. ..	....	.. ..	....	.. ..	....	.. ..	....	.. ..
October	1348	83.80	1008	47.39	603	31.00	907	47.50	....	.. ..	2800	182.50	800	33.50
November†	....	.. ..	1250	80.00	....	.. ..	....	.. ..	....	.. ..	....	.. ..	....	91.00
November	1244	67.44	900	40.00	700	12.00	920	42.18	400	12.00	2043	120.72	....	.. ..
December	1253	71.28	1000	51.50	670	29.00	875	43.40	500	20.00	2217	141.10	....	.. ..
Average 5 months.	1141	67.61	870	40.31	597	24.36	855	41.80	450	16.00	2376	160.30	885	41 28

* No sale held, on account of Texas cattle plague. † "Linson's S."

Last six months of 1868.	CATTLE.								OTHER STOCK.				
	Dry and fat cows—lbs.	Dry and fat cows—price.	Heifers, two yrs—lbs.	Heifers, two yrs—price	Heifers, one yr—lbs.	Heifers, one yr—price.	Bulls—lbs.	Bulls—price.	Horses—average price.	Mules—average price.	Sheep—average price.	Hogs—average price.	Amount of sales.
July	1150	41.88	....	.. ..	....	... ..	....	.. ..	... ..	... ..	....	.. ..	$20,000
August	850	16.00	472	18.67	...	... ..	200	10.00	... ..	... ..	....	.. ..	8,000
September *	....	.. .	....	.. ..	....	... ..	....	.. ..	... ..	... ..	....	.. ..	....
October	893	26 27	....	.. ..	....	... ..	800	60.00	... ..	... ..	....	.. ..	10,200
November †	....	.. ..	....	40.00	....	165.00	....	100.	120.00	112.00	3.75	12.50	8,000
November	978	38 08	....	.. ..	650	20.00	800	25.00	... ..	... ..	....	.. ..	22,150
December	975	39.62	....	.. ..	....	... ..	2000	102.	184.00	... ..	2.27	.. ..	24,850
Average 5 months	969	32.37	472	18.67	650	20.00	950	48.75	150.00	112.00	3.01	12.50	17,040
Total for 5 months	....	.. ..	....	.. ..	....	... ..	....	.. ..	... ..	... ..	....	.. ..	85,200

* No sale held, on account of Texas cattle plague. † "Linson's S."

One Hundred and Fifty-fourth Sale—Tuesday, Jan. 5th, 1869.

CATTLE.

Three-year Olds.

No.	Weight.	Price.
1	1600	$75 00
1	1600	75 00
2 Averaging	1600	$75 00

Two-year Olds.

No.	Weight.	Price.
30	875	$41 00
11	775	33 10
6	900	40 65
22	950	50 00
6	550	20 05
75 Averaging	860	$41 25

One-year Olds.

No.	Weight.	Price.
18	600	$22 25
2	600	25 00
31	775	42 15
12	600	32 00
30	700	36 55
2	450	21 55
7	520	20 80
3	600	26 00
105 Averaging	672	$29 36

182 head of three, two and one-year olds, averaging round 700 lbs., $34.75.

Calves.

No.	Weight.	Price.
2	250	$11 00

Oxen—Yokes.

No.	Weight.	Price.
1 pair, 2 yrs	1900	$160 00
1 pair	2000	149 75
1 pair	3000	234 00
1 pair	3400	243 00
1 pair	3200	210 00
1 pair, aged	3400	146 00
1 pair, 2 years	2000	150 00
1 pair, 2 years	1700	126 00
1 pair	2400	160 00
1 pair	2500	180 00
1 pair	2500	170 00
1 pair, 2 years	2200	160 00
12 pairs, average	2517	$174 00

Milch Cows and Calves.

No.	Weight.	Price.
1	950	$50 00
1	600	35 00
1	850	35 00
1	750	50 00
1	1050	62 00
1	850	35 00
1	900	54 00
7 Averaging	850	$46 00

Dry and Fat Cows.

No.	Weight.	Price.
1	1100	$46 00

Heifers—One-year Olds.

No.	Weight.	Price.
3	450	$15 65

HORSES.

30 head, from $80 to $200, average	$140 00
20 " " 80 to 150, "	115 00
50 head, averaging about	$130 00

Number of cattle reported	222 head.
" horses "	50 "

Amount of cash sales of cattle	$8,825 00
" " horses	6,000 00
Total cash sales	$14,825 00

REMARKS.

After some days of beautiful weather at close of 1868 and opening of 1869, this sale day came in cold and blustering; still a large attendance of home and abroad stock-men were in market. Among them we note the Messrs. Renick, Denny, and others from Scioto, who, we are advised, were looking for some desirable three-year-olds, to consume the large corn surplus of their section. But none of this age was in market. The fact is patent, that all men who own cattle have also an over-supply of corn and other feed, and want the stock to consume it.

Buyers and sellers from Fayette, Franklin, Licking, Champaign, Logan, Hardin, Greene, Clarke, Union, Allen, and others forgotten, were on our streets.

The January sales are usually among our smallest, but to-day's is above the average. In contrast to the last few sales, this one had a fair supply of good work oxen, which were all taken by feeders at fair prices, and more were wanted. The cattle were nearly all sold, and half as many more, coming this way, changed hands ere reaching market.

An additional feature of importance and interest, is the constantly increasing demand for shipping horses. From six to a dozen Eastern and Ohio horse dealers are regularly in attendance at these monthly sales, and are buying all stock suited to their trade at fair prices. The Richmon Bros., large dealers of our own county, who have been in the trade for some fifteen years or more, take the larger number. Beside them, Messrs. Stockton of Columbus, Hedges of Urbana, Alexander of New York, Briel of New York, and others, are regular purchasers.

During the next three or five months large numbers will be wanted, and sellers should bring them in and realize.

One Hundred and Fifty-fifth Sale—Tuesday, Feb. 2d, 1869.

CATTLE.

THREE-YEAR OLDS.

No.	Weight.	Price.
26	1200	$81 75
12	1050	65 30
2	1150	71 00
17	1200	80 00
18	1100	75 00
22	1000	62 35
23	1000	63 30
21	1325	95 00
141 Averaging	1122	$74 88

TWO-YEAR OLDS.

21	700	$40 00
7	800	40 00
10	900	40 50
3	800	44 75
15	900	54 10
19	925	46 00
10	900	55 10
7	750	59 00
3	800	31 05
12	900	52 75
107 Averaging	834	$45 65

ONE-YEAR OLDS.

5	425	$25 00
1	750	32 25
7	650	33 00
9	675	28 50
2	650	41 00
4	600	36 00
26 Averaging	615	$30 12

274 head of three, two and one-year olds, averaging round 969 lbs., $58.48.

CALVES.

No.	Weight.	Price.
26	425	$29 00
7	500	24 25
13	250	12 30
2	500	25 10
48 Averaging	392	$23 62

OXEN—YOKES.

1 pair	3000	$192 00
1 "	2500	185 00
1 "	2600	169 75
1 "	2200	146 00
1 "	2700	170 00
1 " 2 yrs	2100	100 00
1 " aged	2500	138 00
1 "	2400	125 00
8 yokes, average	2538	$153 22

MILCH COWS AND CALVES.

1 and calf	1000	$64 25
1	800	32 50
1	900	56 00
1	900	45 00
1	850	37 25
1 good	900	80 00
1	750	48 50
1 aged	1000	32 00
1	700	36 50
9 Averaging	867	$46 80

HEIFERS—TWO-YEAR OLDS.

8	740	$36 25

HORSES.

20, from $100 to $200 each, average	$150
25, " 75 to 225 " "	120
45 Averaging	$135

Number of cattle reported	360 head.
" horses "	45 "

Amount of cash sales $25,300

REMARKS.

Rain all day long. A large attendance from abroad; the Springfield train brought over a load of Clarke's men. Many cattle; much mud. Stock men say they are losing money; must have bought too high, as to-day's prices are fair.

Not often do we have as many *good* cattle, and of older ages, as to-day; many really *first-class* animals. The numbers brought to market reach from *ten* to *twelve hundred head;* and some *three hundred* western stock, in the hands of *two* parties, were not offered at all. The rain and mud caused cattle to look very badly.

This is said to be *ground hog day*, and of a verity "no shadows were cast," except it were from an "empty glass." Whether spring be six weeks or ten in the future, we are well assured that farmers have an over-abundance of all kinds of feed to last until grass comes.

Cattle ranged in price from 5 to 7 cts. gross. Quite a number were here from Kentucky, Indiana, Illinois, and some of Ohio's *best* cattle counties. One lot of good ones were sold to a Kentucky feeder, and shipped to that State.

The horse buyers were about in force. Messrs. Richmon of Madison, Stockton, Briel, and others, got quite a large number—the first the largest purchasers. We saw many good roadsters and saddle horses, and some of the French draft stock, from the Darby plains. All good animals, suitable for eastern street car and heavier work, will be wanted during the next few months, and that, too, at fair prices.

This month closes our *thirteenth* sale year, and was a representative one in all respects..

One Hundred and Fifty-sixth Sale—Tuesday, March 2d, 1869.

Inauguration of the FOURTEENTH year's Cattle and Horse Sales of Madison County.

CATTLE.

THREE YEARS OLD.

No.	Weight.	Price.
20 Ky. cattle	1000	$71 75
20 "	1100	70 00
32 Mo. cattle	1000	65 00
14 Greene Co.	1300	89 95
86 Averaging	1072	$71 77

TWO YEARS OLD.

No.	Weight.	Price.
7	1000	$55 00
8	900	27 00
22 Ky. cattle	1000	61 10
22	700	36 00
12 Madison Co.	1050	70 00
71 Averaging	904	$50 39

ONE YEAR OLD.

No.	Weight.	Price.
32 Champ'gn Co.	700	$42 10
4 common	600	11 75
14	600	38 75
8	800	22 65
14	600	38 75
72 Averaging	667	$37 00

229 head of three two, and one-year old cattle, averaging round, 892 lbs.—$54.20.

These 229 cattle weighed 204,400 lbs., and came to $12,411.30. Nearly equally divided between the *three* ages.

CALVES.

No.	Weight.	Price.
2	500	$26 87

Oxen—Yokes.

No.	Weight.	Price.
1 pair, 9 years	2400	$183 00
1 pair, 2 years	2800	210 00
1 pair, 5 years	2800	223 00
1 pair, 8 years	2800	175 00
4 yokes, avera'g	2700	$197 75

Milch Cows and Calves.

1 and calf	1000	$59 25
1 "	800	49 00
1 "	1000	60 00
1 "	800	58 93
1 "	1200	80 25
1 "	1000	66 50
1 "	1000	50 00
7 Averaging	971	$60 56

HORSES.

100 head, averaging	$120 00
No. of cattle reported	253 head.
No. of horses reported	100 "
Amount of cash sales of cattle,	$13,680 00
" " horses,	12,000 00
Total reported sales	$25,680 00

These 253 neat animals weighed gross (including calves), 223,000 lbs., being an average, all round, of over 880 lbs.—an extra, heavy, good lot. Taking out the calves, would make the cattle (including yearlings) average fully 1000 lbs. each.

REMARKS.

This beginning of our *fourteenth* yearly sales was largely attended; weather being fine for the first of March.

Probably fully *one thousand cattle* were in market, and most of them were A No. 1's. They came from abroad mostly—Kentucky, Illinois, Missouri and Indiana furnishing the larger part.

A great many were sold at private sale, on private terms. It would be safe to write that the transactions on this day would reach fully *fifty thousand dollars*, were they *all* reported.

Some six or eight horse-buyers were in market, and obtained some *one hundred head*, mostly for street-car purposes East, at fair prices.

Daniel Boyd, Esq., of Pleasant Valley, in our county, sold a mammoth steer—weighing *three thousand and thirty pounds*—at auction, to the "Cattle King," D. Selsor, of Madison, for $540. A real cattle price for a monster.

This sale day was honored by a visit from the Legislature of Ohio, Governor and other State officers, including some dozens of "Press representatives," who came on our invitation to see how "cattle sales" were managed, and also to look at our county, as a competing point, for the location of the State Agricultural and Mechanical College. Beside this, the Agricultural Convention of the Scioto and Miami Valley counties also met in annual council, holding a two days' meeting on the same and following days. With both these, and our usual crowds, the city was pretty well filled.

Some *three hundred* legislative, agricultural and other invited guests, were entertained with banquet at Toland Hall, at 2 o'clock P. M. The honored visitors returned to Columbus by special train in the evening, and those desiring, remained to enjoy "the dance," at Guilcher Hall, at night.

The Agricultural Convention was attended by Secretary Klippart, Ex-

President McMillen, and many other noted agricultural gentlemen, to the number of about *one hundred*, during its two days' session, and many questions of importance and interest were discussed.

Altogether, the new sale year "opes" encouragingly, and to the honor of old Madison—the only county in Ohio, or the West, sustaining a cattle sale.

One Hundred and Fifty-seventh Sale—Tuesday, April 6th, 1869.

CATTLE.

THREE YEARS OLD.

No.	Weight.	Price.
64	1100	$74 00
36	1100	75 50
46	1000	56 75
42	1150	81 00
10	850	57 00
198 Averaging	1030	$70 70

TWO YEARS OLD.

No.	Weight.	Price.
15	925	$59 75
15	800	40 12
20	600	27 50
15	750	31 00
17	850	45 00
15	850	45 00
30	700	40 25
7	825	50 00
9	900	57 50
10	620	30 00
21	850	44 10
69	750	38 10
31	600	30 00
274 Averaging	754	$39 82

ONE YEAR OLD.

No.	Weight.	Price.
11	500	$20 00
11	600	27 25
14	600	31 10
4	575	21 10
2	575	31 50
3	600	45 00
6	600	25 50
11	500	27 20
20	600	30 15
45	650	42 25
16	550	20 25
8	750	38 10
8	650	23 00
159 Averaging	617	$31 50

631 head of three, two and one-year old cattle, averaging round, 806 lbs.—$47.54.

CALVES.

No.	Weight.	Price.
19	400	$25 50
4	500	32 50
24	450	18 50
47 Averaging	434	$22 13

OXEN—YOKES.

No.	Weight.	Price.
1 pair (1 yr)	1000	$42 00
1 " (2 yrs)	1500	65 05
1 " (2 yrs)	1500	99 00
1 " (2 yrs)	3000	225 00
4 yokes, aver'g	1750	$107 75

MILCH COWS AND CALVES.

No.	Weight.	Price.
1 with calf	950	$52 00
1 "	1000	64 21
1 "	1000	55 00
1 (aged)	750	32 00
1 with calf	850	44 00
1 "	900	47 00
1 "	950	51 50
1 (aged)	900	25 00
1 with calf	1000	64 00
1 "	1000	49 50
1	850	40 25
11 Averaging	923	$47 68

DRY AND FAT COWS.

No.	Weight.	Price.
3	900	$51 00
4	700	21 10
1	950	37 50
1	900	49 50
1	1000	54 00
1	900	38 00
11 Averaging	840	$37 88

HORSES.

No.		Price range		Average
10 mares		$80 to $125,	aver'g	$105
10 horses		115 to 200,	"	150
17	"	80 to 225,	"	125
34	"	75 to 200,	"	120
6	"	75 to 100,	"	90
25	" (home)	50 to 100,	"	80
5	"	80 to 175,	"	100
10	"	85 to 225,	"	130
17	"	100 to 200,	"	150
134 Averaging about				$125

(About 30 of these were purchased last sale day, but were not reported at that time.)

Number of Cattle reported	713	head.
" Horses "	134	"
Total of both	847	head.

Cash sales of Cattle	$33,330
" " Horses	16,650
Total of both	$49,980

(These 731 head of cattle above reported, weighed in round numbers, per our estimates, 555,500 lbs ; an average all round, every age and kind, of 760 lbs., and the amount of sales, from these cattle, add up the sum of $33,330.

The *weights* are all *fives*, and the *dollars* all *threes;* a remarkable coincidence, and one that in all probability might not, or will not, *ever* again occur. Were we a believer in "signs," should augur that *corn* and *wheat* would, this year, show gains by *fives* and *threes*, over former years.)

REMARKS.

The winter weather gave place to "spring-time" in fact to-day, and stock men were "on the square," in more senses than one.

Messrs. Alex. Waddle, Helmick, Jas. Smith, Chamberlin (otherwise Walter N.), McArthur, Cathcart, and numerous others of Clarke, came over, via rail; while Messrs. Turnbull, Wade, Shinn, Colvin, and dozens like them from Greene, "put in an appearance." Hosts of others, new and old, from Franklin, Champaign, Hardin, Logan, Pickaway, Fayette, Union, Hamilton, and elsewhere, were in market as both sellers and buyers.

We have never seen a more lively time. Cattle by hundreds were brought in, many being unoffered, among them several large lots; not less than *ten to twelve hundred* head were brought hither.

The first sold brought *best* prices; later, when it became evident that the market was overstocked, bidding was less lively. Never before have so many horsemen, as buyers or sellers, been in market.

Messrs. Leonard and Addison of Cincinnati, Shenlein of N. Y., Ballard of Warren, O., Miller of Lancaster, Pa., Hanoma of Yellow Springs, and the Richmon Bros. of Madison, among them, got a *hundred head* and over, nearly all for Eastern shipment.

One Hundred and Fifty-eighth Sale—Tuesday, May 4th, 1869.

CATTLE.

THREE YEARS OLD.

No.	Weight.	Price.
10	1100	$65 25
40	1225	81 75
20	1025	60 05
9	900	52 00
32	1200	93 05
20	950	55 00
15	1000	65 00
20	1000	65 00
60	1000	65 00
226 Averaging	1062	$70 10

TWO YEARS OLD.

27	900	$50 00

ONE YEAR OLD.

14	400	$20 50
21	600	16 00
8	600	24 35
43 Averaging	535	$18 80

296 head of three, two and one-year old cattle, averaging, round. 772 lbs.—$60.62. (These 296 head of cattle brought $18,000, in round numbers.)

OXEN—YOKES.

No.	Weight.	Price.
1 pair	2700	$180 00
1 "	2700	175 00
2 yokes, averg	2700	$177 50

MILCH COWS AND CALVES.

1 and calf	1000	$43 25
1 "	950	45 50
3	800	45 50
5 Averaging	870	$45 05

DRY AND FAT COWS.

1	900	$56 00

HORSES.

2	mares	$130 00
4	horses and mares	100 50
2	(aged)	84 00
13	horses	140 00
2	'	135 00
4	"	162 50
27	head, averaging about	$135 00

Number of Cattle reported	308 head.
" Horses "	27 "
Total of both	335 head.
Amount of cash sales Cattle	$18,600
" " Horses	4,500
Total of both	$23,100

REMARKS.

The attendance of "home men" was not large, but the numbers from abroad, attracted by the Short-horn sale of Robt. George Dun, Esq., of this county—who held his *second* annual sale also to-day—was large. These gentlemen were from Kentucky, Tennessee, Illinois Indiana, Pennsylvania, and other States.

Some *four to five hundred* head of cattle were in regular market, and were all sold, though many changed hands on private terms. The grass promises abundantly, hence graziers desire stock to consume it.

One Hundred and Fifty-ninth Sale—Tuesday, June 1st, 1869.

CATTLE.

Three Years Old.

No.	Weight.	Price.
10	1050	$61 20
32	1200	77 32
26	1200	78 00
6	1100	75 75
14	1250	88 00
84 Averaging	1205	$77 45

Two Years Old.

No.	Weight.	Price.
20	1050	$64 70
3	825	42 75
3	800	41 66
28	800	40 50
6	800	44 00
7	700	35 00
14	875	45 55
14	700	37 70
15	900	40 10
9	700	31 00
2	700	35 00
12	850	48 45
31	850	41 35
7	650	27 65
23	675	28 00
12	950	48 45
10	600	30 30
37	675	42 25
253 Averaging	800	$41 34

One Year Old.

No.	Weight.	Price.
17	350	$16 11
2	500	22 00
6	450	21 05
2	450	$18 00
2	500	27 50
24	550	27 30
7	675	27 65
60 Averaging	444	$23 05

397 head of three, two and one-year old cattle, averaging, round, 837 lbs.—$46.21.

Milch Cows and Calves.

No.	Weight.	Price.
1	850	$32 35
1 with calf	950	39 25
1 "	800	37 00
8	750	45 00
6	750	46 00
1 with calf	1400	64 50
1 "	950	52 50
1 "	900	45 00
20 Averaging	818	$45 33

Dry and Fat Cows.

No.	Weight.	Price.
2	900	$49 50
1	800	32 00
1	1150	50 00
3	800	40 00
1	1100	50 00
8 Averaging	906	$43 75

Heifers—Two Years Old.

No.	Weight.	Price.
2	600	$29 00
2	700	32 00
4 Averaging	650	$30 50

HORSES.

18	at from $75 to $160, averg. "	$120 each.
8	"	80 "
8	"	115 "
12	at from $100 to $175, "	150 "
5	"	104 "
14	"	107 "
65	Averaging	$115 each.

Number of Cattle reported	434 head.
" Horses "	65 "
Total of both	499 head.
Amount of cash sales Cattle	$19,725
" " Horses	7,540
Total of both	$27,265

(These 434 head of cattle weighed (per estimates) 354,600 lbs., or 820 lbs. each, including all kinds and ages.)

REMARKS.

This June sale closes the *first* six months of 1869, and all in all, the past half year has been one—if not the very largest—of the best.

For some days past, unusual wet weather has retarded and prevented corn planting and working, hence many came who would not have so done had weather been good. The Clarke, Franklin and Fayette men were out in usual force.

Champaign—usually sending us quite a number of cattle—having resolved to inaugurate a similar enterprise, has withheld her usual supplies.

Of home men, D. Selsor, the *four* Dun brothers, the *four* or *five* Wilson brothers, and others of our graziers, and to whose efforts our county has for so long maintained her proud position as "The Queen of Cattledom," were out as usual.

The horse purchasers were here in force, and got over half a hundred —all street-car stock for Eastern markets. Messrs. Stockton, Briggs, Landis, Shenlein, and "Hi and Will" Richmon, were the principal buyers. The prices paid were fully as high as heretofore.

There is no mistaking the fact that this is now by far the *largest* and *best* Horse market (as well as cattle) in Ohio; and this branch is increasing in a ratio, to our mind, beyond the neat stock, though a glance at this year's report compared with former showing, will convince any one that "we are progressing" lively in our regular sales' work.

Three-year old cattle, to-day, brought about 6½ cents, two years old a fraction above 5 cents, while milch, and dry and fat cows vary but little from the latter price.

The grass was never finer nor better than present spring, and should the weather continue favorable, large numbers of good grazing cattle will be wanted by our stock men during the next sixty days; hence future sales will probably be large.

Recapitulation, first six months of 1869, showing the numbers sold (as per report) of each age and kind, and the total number of cattle, all ages, with the total number of stock of all kinds.

First six months of 1869.	CATTLE.											OTHER STOCK.	
	Three years.	Two years.	One year.	Three, two, and one year olds.	Calves.	Oxen—yokes.	Milch cows and calves.	Dry and fat cows.	Two year old heifers.	One year old heifers.	Total all cattle.	Horses.	Total of all stock.
January	2	75	105	182	2	12	7	1	....	3	222	50	272
February	141	107	26	274	48	8	9	....	8	....	360	45	405
March	86	71	72	229	2	4	7	....	....	....	253	100	353
April	198	274	159	631	47	4	11	11	....	....	713	134	847
May	226	27	43	296	....	2	5	1	....	....	308	27	335
June	84	253	60	397	....	....	20	8	4	....	434	65	499
Total	737	807	465	2009	99	30	59	21	12	3	2290	421	2711

Table showing the average prices of the different ages of cattle (with average weights,) and the average price per head, of all ages, separately; also, average of three, two, and one year old cattle, together, for each month of the first half year of 1869. and total average for the time of all kinds; with the addition of the averages of all other stock reported monthly, and total for the first six months of 1869; also, amount of cash sales monthly, and total.

First six months of 1869.	CATTLE.											
	Three yrs—lbs.	Three yrs—price.	Two yrs—lbs.	Two yrs—price.	One yr—lbs.	One yr—price.	Three, two, and one yrs—lbs.	Three, two, and one yrs—price.	Calves—lbs.	Calves—price.	Oxen, yokes—lbs.	Oxen, yokes—price.
January	1600	75.00	860	41.25	672	29.36	700	34.75	250	11.00	2517	174.00
February	1122	74.88	834	45.65	615	30 12	969	58.48	392	23.62	2538	153 22
March	1072	71.77	904	50.39	667	37.00	892	54.20	500	26.87	2700	197.75
April	1030	70.70	754	39.82	617	31.50	806	47 42	434	22.13	1750	107.75
May	1062	70.10	900	50 00	535	18.80	972	60.82	....	......	2700	177.50
June	1205	77.45	800	41.34	444	23.05	837	46.21	....	......	....	......
Aver. of six months.	1182	73.32	842	44.74	592	28.30	863	50 31	394	20.90	2441	162.05

First six months of 1869.	CATTLE.								OTHER STOCK.	
	Milch cows and calves—lbs.	Milk cows and calves—price.	Dry and fat cows—lbs.	Dry and fat cows—price.	Heifers, two yrs—lbs.	Heifers, two yrs—price.	Heifers, one yr—lbs.	Heifers, one yr—price.	Horses—average price.	Amount of sales.
January	850	46.00	1100	46.00	....	......	450	15.65	130.00	$14,825 00
February	867	46.80	....	......	740	36.25	....	......	135.00	25,300 00
March	971	60.56	....	......	....	......	....	......	120 00	25,680 00
April	953	47.68	840	37.82	....	......	....	......	125 00	49,980 00
May	870	45.05	950	56.00	....	......	....	......	135.00	23,100 00
June	818	45.33	906	43.75	650	30 50	....	......	115 00	27,265 00
Average of six months.	888	48.57	974	45.89	695	33.38	450	15.65	126.67	27,692 00
Total am't sales six mos	....	......	....	......	....	......	....	......	......	166,150 00

General Recapitulation.—*One year from July,* 1868, *to July,* 1869, *showing the total number sold (as per half yearly reports above), of each age and kind; and the total number of cattle, all ages, with the total number of stock of all kinds, for whole time.*

Years.	CATTLE.								
	Three years.	Two years.	One year.	Total of three, two and one years.	Calves.	Oxen—yokes.	Milch cows and calves.	Dry and fat cows.	Heifers, 3 yrs.
1868—Last 6 months	284	1195	392	1827	7	30	19	26	..
1869—First 6 months	737	807	465	2009	99	30	59	21	..
Total of both, from July to July	1021	2002	857	3836	106	60	78	47	..

Years.	CATTLE.				OTHER STOCK.				TOTAL ALL.
	Heifers, 2 yrs.	Heifers, 1 yr.	Bulls.	Total all cattle.	Horses.	Mules.	Sheep.	Hogs.	Total of stock, all kinds.
1868—Last 6 months	16	2	5	2015	11	2	830	15	2873
1869—First 6 months	12	3	..	2290	431	..	...	..	2711
Total of both, from July to July	28	5	5	4305	442	2	830	15	5584

TOTAL TABLE.—*Showing the average prices of the different ages of cattle (with average weights) and the average price per head, of all ages, separately; also, average of 3, 2 and 1-year old cattle together, for the whole time of one year, from July, 1868, to July, 1869, and the total average for the whole time, of all kinds; with the addition of the averages of all other stock reported for each six months, and total for the year. Also, amount of cash sales, for each six months, and total for year.*

Years.	CATTLE.									
	Three yrs.—lbs.	Three yrs.—Price.	Two yrs.—lbs.	Two yrs.—Price.	One yr.—lbs.	One yr.—Price.	Three, two and one yr.—lbs.	Three, two and one yr.—Price.	Calves.—lbs.	Calves.—Price.
Last half of 1868....	1141	67.61	870	40.31	597	24.36	855	41.80	450	16.00
First half of 1869 ...	1182	73.32	842	44.74	592	28.30	863	50.30	394	20.90
Total for year, from July to July—av'gs	1162	70.47	856	42.53	595	26.33	859	46.05	422	18.45

Years.	CATTLE.									
	Yokes of oxen.—lbs.	Yokes of oxen.—Price.	Milch cows and calves.—lbs.	Milch cows and calves.—Price.	Dry and fat cows—lbs.	Dry and fat cows—Price.	Heifers, 3 yrs.—lbs.	Heifers, 3 yrs.—P'ce.	Heifers, 2 yrs.—lbs.	Heifers, 2 yrs.—P'ce.
Last half of 1868....	2376	160.30	885	41.28	969	32.37	...	...	472	18.67
First half of 1869 ...	2441	162.05	888	48.57	974	45.89	...	...	695	33.38
Total for year, from July to July—av'gs	2409	161.08	887	44.93	972	39.03	...	...	584	26.03

Years.	CATTLE.				OTHER STOCK.				
	Heifers, 1 yr.—lbs.	Heifers, 1 yr.—Price.	Bulls.—lbs.	Bulls.—Price.	Horses.—Price.	Mules.—Price.	Sheep.—Price.	Hogs.—Price.	Amount of cash sales.
Last half of 1868....	650	20.00	950	48.75	150.00	112.00	3.01	12.50	$85,200 for 5 mos. 17,040 aver. mo.
First half of 1869 ...	450	15.65	...	...	126.67	....	...	...	166,150 for 6 mos. 27,692 aver. mo.
Total for year, from July to July—av'gs	550	17.83	950	48.75	138.34	112.00	3.01	12.50	$251,350, 11 mos.
					Average per mo. for 11 mos.......				$22,366

***Grand Total Recapitulation**, for whole time of thirteen years and four months, from the inauguration of these "Cattle and Horse Sales," March 8th, 1856, to July 1st, 1869, showing (so far as recorded) the total number sold (as per yearly reports above) of each age and kind, and the total number of cattle, all ages, with the total numbers of stock of all kinds, for the whole time.*

Years. 160 sales from March 8th, 1856, to July 1st, 1869	CATTLE.													OTHER STOCK.					Remarks.
	Three years.	Two years.	One year.	Total of three, two and one year.	Calves.	Oxen—yokes.	Milch cows and calves.	Dry and fat cows.	Heifers, three years.	Heifers, two years.	Heifers, one year.	Bulls.	Total of all cattle.	Horses.	Mules.	Sheep.	Hogs.	Total stock of all kinds.	
1856—10 months.	430	360	....	790	....	50	20	60	15	30	25	....	1500	....	....	....	....	1500	Not all reported.
1857—12 " ..	970	1630	1110	3710	2	48	16	10	....	....	....	10	3842	52	4	852	28	4996	Not all reported.
1858—12 " ..	318	1267	661	2246	....	13	34	34	....	....	....	....	2340	55	37	690	57	3179	
1859—12 " ..	936	1433	806	3175	14	37	40	20	....	....	....	2	3325	53	72	271	....	3721	
1860—12 " ..	1071	1264	906	3241	19	102	24	41	....	....	....	3	3430	37	....	177	28	3672	
1861—12 " ..	543	922	702	2167	24	38	28	5	....	....	....	....	2268	....	14	315	40	2637	[cluded—were not reported.
1862—10 " ..	1061	996	949	3006	44	29	28	22	....	....	....	....	3129	....	....	300	15	3444	November and December not in-
1863—10 " ..	699	802	198	1699	13	40	17	124	....	....	....	3	1896	....	....	1047	....	2943	No sales July or October—fall of
1864—12 " ..	259	732	273	1264	18	104	31	64	....	....	....	2	1483	....	....	237	....	1720	Vicksburg and State election.
1865—11 " ..	413	805	262	1480	64	78	37	73	....	....	....	4	1736	15	76	225	....	2052	No sale in July—"Glorious Fourth."
1866—12 " ..	709	940	520	2169	32	62	47	103	....	57	17	5	2554	26	47	228	76	2931	
1867—12 " ..	643	1664	632	2939	10	86	46	193	....	21	29	3	3454	....	23	236	....	3713	
1868—11 " ..	960	2247	793	4025	65	65	48	89	3	29	12	8	4491	151	14	1080	15	5701	No sale in Sept.—"Cattle Plague."
1869—1st 6 mos.	734	807	465	2009	99	30	59	21	....	12	3	....	2290	421	...	....	....	2711	
Total of 156 sales	9646	15,869	8277	33,921	404	782	475	859	18	149	86	40	37,740	810	287	5608	259	44,920	
Aver. per year..	742	1221	635	2610	31	60	37	66	....	....	....	....	2903	62	22	431	20	3455	
Aver. per month.	60	102	53	218	....	....	....	....	....	....	....	....	242	....	....	....	....	288	

Grand Total Table for whole time of thirteen years and four months, from the inauguration of these "Cattle and Horse Sales," March 8, 1856, to July 1, 1869, showing the average prices of the different ages of cattle (so far as recorded), with average weight, and the average price per head, of all ages, separately; also, average of three, two and one-year old cattle, together, for each year of whole time of thirteen years and four months, and total average for the time, of all kinds; with the addition of the averages of all other stock reported yearly, and total for whole time of 160 sales; also, amount of "cash sales" yearly, and for total time of 160 sales.

Years—160 Sales.	CATTLE.							
	Three years—lbs.	Three years—price.	Two years—lbs.	Two years—price.	One year—lbs.	One year—price.	Three, two and one year—lbs.	Three, two and one year—price.
1856—10 months..........	......	$37 75	......	$19 00	......	....	......	$25 75
1857—12 "	......	34 80	......	24 04	......	$16 40	......	25 08
1858—12 "	1100	33 63	913	23 15	620	14 41	940	23 75
1859—12 "	1137	35 02	913	23 19	640	15 84	900	21 82
1860—12 "	1016	29 65	870	24 86	654	17 46	847	23 99
1861—12 "	1037	25 62	872	20 06	601	13 90	840	24 43
1862—10* "	1031	25 60	772	16 33	586	12 06	809	18 04
1863—10* "	1021	38 06	808	19 52	609	13 17	843	22 03
1864—11* "	997	41 23	788	27 50	611	16 75	783	27 48
1865—11* "	942	45 86	817	36 77	639	24 44	785	35 02
1866—12 "	1175	72 91	927	51 84	665	34 36	952	55 50
1867—12 "	1129	71 40	902	48 54	594	29 50	887	49 05
1868—11* "	1095	68 01	840	43 14	585	27 15	852	45 83
1869—1st 6 "	1182	73 32	842	44 74	592	28 30	863	50 31
Average for whole time...	1072	$45 24	855	$30 19	616	$20 31	850	$31 72
Do. for 1864, when prices began to advance	1105	66 30	866	45 01	607	28 75	868	47 14

Grand Total Table—Continued.

Years—160 Sales.	CATTLE.										
	Calves—lbs.	Calves—price.	Yokes of oxen—lbs.	Yokes of oxen—price.	Milch cows and calves—lbs.	Milch cows and calves—price.	Dry and fat cows—lbs.	Dry and fat cows—price.	Heifers, 3 yrs—lbs.	Heifers, 3 yrs—price.	Heifers, 2 yrs—lbs.
1856—10 months........	....	......	....	$107 80	....	$40 00	....	......	....	$17 50	....
1857—12 "	....	$27 00	....	105 68	....	26 56	....	......	....	......	....
1858—12 "	350	8 85	2488	85 00	950	25 65	1150	$24 00	....	......	....
1859—12 "	350	8 85	2488	90 84	1400	26 77	1150	24 00	....	......	....
1860—12 "	267	9 05	2584	84 48	1093	24 28	1052	26 25	....	......	....
1861—12 "	350	5 18	2610	72 75	1016	21 62	1214	26 09	....	......	....
1862—10* "	392	6 26	2445	66 03	1025	19 81	1021	24 85	....	......	....
1863—10* "	370	6 39	2350	78 46	975	18 17	826	19 55	....	......	....
1864—11* "	400	10 09	2911	133 04	1000	33 50	1190	27 00	....	......	....
1865—11 "	500	15 16	2475	162 83	1000	45 00	1017	39 89	....	......	....
1866—12 "	450	27 54	2720	175 39	1000	53 17	1015	53 75	....	......	850
1867—12 "	475	28 75	2704	186 44	950	52 26	972	39 74	....	......	732
1868—11* "	412	15 80	2432	175 10	901	46 58	930	38 84	766	32 92	584
1869—1st 6 "	394	20 90	2441	162 05	888	48 57	974	45 89	....	......	695
Average for whole time..	393	$13 57	2554	$120 42	1017	$34 40	1035	$32 50	766	$25 21	715
Do. for 1864, when prices began to advance......	446	21 43	2554	172 36	948	49 11	981	43 62	766	32 92	715

Grand Total Table—Continued.

Years—160 Sales.	CATTLE.					OTHER STOCK.				Yearly average and total of cash sales, and total amount of same for whole time.
	Heifers, 2 yrs—price.	Heifers, 1 yr—lbs.	Heifers, 1 yr—price.	Bulls—lbs.	Bulls—price.	Horses—av'g price.	Mules—av'g price.	Sheep—av'g price.	Hogs—av'g price.	
1856—10 months....	......	...	......	....	$75 00	......	....	.....	.....	$60,000 00 6,000 00
1857—12 "	$20 60	...	$16 00	....	58 33	$99 90	$120 00	$3 09	$6 69	172,000 00 14,333 00
1858—12 "	22 03	...	15 00	....	47 00	83 19	99 57	1 06	5 48	77,250 00 6,450 00
1859—12 "	22 03	...	15 00	....	47 00	91 88	74 75	1 81	.....	125,500 00 10,500 00
1860—12 "	......	...	......	1300	41 83	72 10	....	1 76	5 19	96,000 00 8,000 00
1861—12 "	......	...	......	1112	33 90	......	64 00	1 96	4 30	48,000 00 4,000 00
1862—10* "	......	...	......	....	......	......	....	2 41	2 15	60,000 00 6,000 00
1863—10* "	......	...	......	1300	29 50	......	....	3 51	.....	50,000 00 5,000 00
1864—11* "	......	...	......	1150	27 25	......	....	3 91	.....	50,000 00 4,500 00
1865—11* "	......	...	......	850	31 00	80 00	78 90	4 11	.....	82,000 00 7,500 00
1866—12* "	40 40	650	33 00	950	39 32	63 33	94 63	2 65	10 55	156,000 00 13,000 00
1867—12 "	32 71	528	17 60	1200	49 25	......	65 00	2 65	.....	180,000 00 15,000 00
1868—11* "	22 96	575	18 87	950	36 50	141 67	96 00	3 46	12 50	227,000 00 20,600 00
1869—1st 6 "	33 38	450	15 65	....	......	126 67	....	.....	.....	166,000 00 27,500 00
Av'g for whole time.	$27 73	551	$18 59	1101	$43 00	$94 89	$86 61	$2 70	$6 70	$1,550,000 00
Do. 1864, when prices began to advance.	32 36	551	21 03	990	39 02	102 92	83 63	3 22	11 52	....

Average per year........	$122,550 00
" " month........	10,200 00
Amount of sales for past four and a half years........	811,000 00
Average per year for same time........	180,000 00
" " month " "	15,000 00

CONCLUSION.

The reports of these monthly stock sales have been recorded in past Ohio agricultural volumes, 'tistrue, but so far apart, and at such irregular intervals, that many now noting them and their importance, not being in possession of former issues, would have but a partial idea of the magnitude of this enterprise; and as we have the honor of having both inaugurated and sustained these sales, I have thought it desirable, and, perhaps, interesting and valuable, to many stock-men, both at home and abroad, to collect these "general and grand total recapitulation tables," showing at a glance (so far as our records show, which for several years were not nearly so complete and satisfactory as now) the number sold, of the different ages and kinds, and also the average weights and prices paid during the past *thirteen* years, in this stock centre of Ohio—this heart of "the blue grass"—this first cattle county in the State; and from whose pastures have annually been sent eastward, to Gotham, her choicest Christmas and other beef.

These tables have been as carefully collated as 'twas possible to make them; and in order to make it more marked, and to better indicate the very large advances in prices, brought about since the war began, and yet continued, I have not only shown the averages for the *whole* time, but also those of the past—nearly *five*—years. At the close of 1864 and beginning of 1865, it will be seen at a glance that the prices then and since ruling, were very largely above those of former years. Beside this, the averages of *weights* will show that not without good reasons were prices advanced, and that (almost without exception) the weights of *all* ages and kinds of neat stock are larger than in former years, which conclusively proves that the *quality* is advancing in a ratio proportionate (in part at least) to the price. However, there is no doubt in the minds of the intelligent cattle-men, feeders and graziers of the Central Ohio valleys, but that our prices for cattle, both fat and stock, are now beyond what *can* or *should* be maintained, with other articles of consumption largely declined from the prices of the past few years, and that the ruling rates for this stock must decline to a level with other meats (and bread-stuffs as well), both east and west, ere many months, but few are found to doubt. The feeders and graziers have the fat cattle yet unsold; if sold, a loss must result, as the stock were bought at prices of last fall. Still we think it better to sell, and repurchase, to fill up the over-abundant pastures, at lower rates, and let all, both buyers and sellers, resolve to put down, and keep down prices in the future, so that the animals will pay a fair profit, for the grass and corn consumed, in fitting them for the butcher, the Eastern consumer.

That this is an extensive horse as well as cattle mart, and that prices paid during the past year pay well to raise, and that our horse-men are stimulated to improve this stock, and are so doing largely, the numerous importations of breeding horses—both draft, roadster and racer—into our county, by horse fanciers and enthusiasts, the records numerously attest. All in all, we are progressing in stock improvement, and have no shadow of doubt but that future records will show such to be the fact.

Madison occupies a proud position—the first in quality, and but few ahead of her in numbers.

We note the fact with pleasure, that other stock sections are following in our footsteps, and inaugurating sales' enterprises, which we hope and trust will redound to the honor of their stock-men as has this to ours.

Truly,

IRVING F. WILLIS.

LONDON, O., June 16th, 1869.

Report of the First Annual Shorthorn Sale of the Brothers Dun—Robert George and John G.—of their surplus young thoroughbred cattle, from the breeding farms of these stock-men in Madison county, O.; held on the Fair grounds, London, O., Wednesday, May 6, 1868. *By* IRVING F. WILLIS, *London, O.*

ROBERT GEORGE DUN'S HERD: 20 ANIMALS—9 BULLS AND 11 COWS AND HEIFERS.

BULLS.

Name.	Get of—	When calved.	Price at which started.	Purchaser.	County.	Price.
1. Jack Spratt	Northern Light	December 29, 1866	$100 00	Jno. Reber	Lancaster, Fairfield Co.	$125 00
2. Tyrian	" "	April 15, 1867	50 00	Robert Boyd	London, Madison Co.	75 00
3. Xenophon	" "	December 24, 1866	75 00	L. B. Sprague	Springfield, Clarke Co.	285 00
4. Alhambra	" "	February 20, 1867	100 00	Cook, Landon & Rugg	Delaware and Franklin.	185 00
5. Ensign	Ingot	July 2, 1867	100 00	W. A. Dun	Madison county	185 00
6. Æneas	Northern Light	March 10, 1867	75 00	F. M. Chenoweth	" "	150 00
7. Southern Light	" "	February 12, 1867	100 00	John Clarke	Clarke county	185 00
8. Plumwood	" "	February 8, 1867	150 00	Benj. Linson	Madison county	265 00
9. Dundee	" "	March 8, 1867	150 00	Chas. M. Clarke	Clarke county	365 00

SAME HERD—COWS AND HEIFERS—11 HEAD.

1. Ellendale (with bull calf at side)	Mogul	August 9, 1865	$125 00	Asa Bates	Union county	$130 00
2. Lennie Vaughn	Mead Massie	March 26, 1866	75 00	Sam'l Cheney	Champaign county	110 00
3. Fon du Lac	Mogul	November 4, 1866	100 00	same	" "	175 00
4. Lady Graceful (with bull calf at side)	"	April 1, 1864	60 00	Wesley Werk	Pickaway county	160 00
5. Miss Electa	Northern Light	November 15, 1866	100 00	Asa Bates	Union county	180 00
6. Lady Blonde	" "	April 19, 1867	105 00	Harford Toland	Madison county	155 00
7. Rose of Dunglade	" "	December 9, 1866	100 00	Wesley Werk	Pickaway county	265 00
8. Lady Kent	" "	February 27, 1867	75 00	J. A. Pringle	Madison county	115 00
9. Ingloe	Ingot	December 12, 1866	150 00	Asa Bates	Union county	305 00
10. Prunella	"	December 17, 1866	250 00	Jas. Rankin	Madison county	285 00
11. Prairie Maid	Northern Light	April 13, 1867	100 00	John Wilson	Clarke county	175 00

JOHN G. DUN'S HERD.

Bulls—7 Head.

Name.	Get of—	When calved.	Price at which started.	Purchaser.	County.	Price.
1. Jack Cade	Volunteer	Nov. 22, '65	$50	B. F. Brown	Miami Co., O.	$105 00
2. Soft Jacket	Mozart	May 17, '66	75	Wm. A. Neil, Jr.	Madison Co., O.	135 00
3. Orman	Mario 2d	Feb. 4, '67	70	Addison Watson	" "	100 00
4. Robin Hood	" "	April 14, '67	60	Wm. Cryder	" "	130 00
5. Bugle	" "	May 20, '67	60	Benj. Custer	" "	155 00
6. Claret	" "	May 16, '67	60	Edward Merrett	Clarke Co., O.	180 00
7. Omaha	" "	July 3, '67	75	Bell Bros.	Madison Co., O.	170 00

SAME HERD.

Cows and Heifers—5 Head.

Name.	Get of—	When calved.	Price at which started.	Purchaser.	County.	Price.
1. Cameo	Mario 2d	Dec. 25, '66	$100	L. B. Sprague	Clarke Co., O.	$215 00
2. Amber	" "	Jan. 21, '67	100	Asa Bates	Union "	140 00
3. Vanina	" "	April 9, '67	50	Robt. George Dun	Madison "	140 00
4. Gentle	" "	April 23, '67	50	R. B. Cowling	" "	125 00
5. Pixie	" "	May 22, '67	75	L. B. Sprague	Clarke "	240 00

Total and Averages.

The 9 Bulls of Robt. George Dun brought a total of	$1820.	Being an average, all round, of	$202 22
The 7 Bulls of Jno. G. Dun brought a total of	975.	" " " "	139 29
The 16 Bulls of both herds brought a total of	$2795.	Being an average, all round, of	$174 69

The 11 cows and heifers of Robert George Dun, brought a total of	$2,055	00
Being an average all round of	186	75
The 5 cows and heifers of Jno. G Dun, brought a total of	860	00
Being an average all round of	172	00
The 16 cows and heifers of both herds brought a total of	$2,915	00
And averaged all round	182	19
The 32 animals sold of both herds brought a total of	$5,710	00
Being an average all round of	178	44
The 20 animals of Robert George Dun brought a total of	$3,875	00
Being an average all round of	193	75
The 12 animals of Jno. G. Dun brought a total of	$1,835	00
Being an average all round of	152	95

REMARKS.

The *thirty-two* short-horns above recorded were nearly all *one*, and two year olds, and were sold without reservation to the highest bidder. They were sold as catalogued, beginning with the bulls of Robert George Dun's herd. The day of sale opened most inauspiciously, copious rains falling soon after opening of the sale.

That the demand for this stock was unsupplied, is instanced by the fact that towards the close the bidding was most spirited and advanced over opening prices.

Beside a large attendance of our home farmers, graziers, breeders and feeders, quite a number were present from adjoining counties, and some from other States.

The Wardsworth brothers, sons of the late General Wardsworth, of Genesee, New York, secured a prize in the purchase of the Duchess bull, Duke Imperial, bred by Sheldon, of New York, but for three years past the property of Messrs. Hills and Jones, of Delaware county, Ohio, who disposed of him for no fault; but having used him as long as advisable, he now is returned to his native State.

The Messrs. Dun bid quite spiritedly, having ideas of purchase for crossing on their herds, but the Wardsworth brothers were determined, bidding $100 each advance, and finally the hammer fell at $745, their last bid.

This was the first sale venture of our breeders, the Messrs. Dun, but they hope to continue thus annually to dispose of and distribute the choice young stock of their large herds.

The averages, as shown above, are, to our mind, fair prices, all things considered, and, if our memory be not at fault, are considerably better than those obtained by the late R. A. Alexander, of Kentucky, at any of his annual sales.

Among the stock going abroad, was one purchased by our enthusiastic friends in Franklin and Delaware counties, Messrs. Cook, Landon and

Rugg, who were most fortunate in securing so fine a bull as Alhambra. Mr. Dun valued him at a much higher figure than was paid by the purchasers, and we doubt not but that his get will show the many good qualities of his sire.

We give the *opening*, as well as *closing* bids, showing lively competition.

We find that out of the *thirty-two* animals sold, *fourteen* head of these (*nine* bulls and *four* heifers) were retained in Madison county; of the remaining *eighteen*, *one* went to Fairfield, *seven* to Clarke, *one* to Delaware, *one* to Miami, *four* to Union, *two* to Champaign, and *two* to Pickaway county; a general and quite extensive distribution of the animals of these well known Madison county herds.

The terms of payment were most liberal, being *nine* months, without interest.

Report of the Second Annual Sale of Shorthorns, of Robert G. Dun, from his herds at "Plumwood Farm," Madison County, Ohio, held at London, Ohio, Tuesday, May 4, 1869.

BULLS.—TEN HEAD, ALL YEARLINGS.

Name.	Color.	When Calved.	Purchaser.	Residence.	Price.
1. Plumwood Lad	Roan	Feb. 10, 1868	J. R. Gunn	Kenton, Hardin Co	$300 00
2. Don Juan	Roan	March 20, 1868	Wm. Matthews	Etna, Licking Co	205 00
3. Grandee	Roan	March 5, 1868	A. N. Norris	Wellsville, Columbiana Co	235 00
4. Don John	Red and white	Feb. 21, 1868	B. F. Renick	Harrisburgh, Franklin Co	280 00
5. Ringleader	Red	March 29, 1868	Wm. B. Franklin	London, Madison Co	185 00
6. Robert Burns	Roan	Feb. 29, 1868	Pearly Mitchell	Bloomingsdale, Ind	280 00
7. Relentless	Red	June 23, 1868	Wm. Hall	Mt. Sterling, Madison Co	135 00
8. Don Zales	Red and white	Feb. 3, 1868	Jerry Rea	London, Madison Co	215 00
9. Darbyite	Roan	Feb. 10, 1868	Alexander McKinley	Syracuse, N. Y	255 00
10. Bon-Ton*	Red	April 24, 1865	J. R. Gunn	Kenton, Hardin Co	405 00
HEIFERS.—EIGHT HEAD.					
1. Prunette	Red	Jan. 24, 1868	Wm. B. Franklin	London, Madison Co	225 00
2. Zealous	Roan	March 7, 1868	Daniel McMillen	Xenia, Greene Co	250 00
3. Plumwood Darling	Red	Feb. 29, 1868	Pearly Mitchell	Bloomingsdale, Ind	150 00
4. Zingara	Roan	Feb. 3, 1868	Daniel McMillen	Xenia, Greene Co	250 00
5. Plumwood Girl	Roan	May 19, 1868	Pearly Mitchell	Bloomingsdale, Ind	135 09
6. Leean	Roan	Feb. 19, 1868	Daniel McMillen	Xenia, Greene Co	300 00
7. Elvy's Echo	Roan	Mar. 27, 1868	Alfred Pringle	California, Madison Co	195 00
8. Honey Bud	Roan	Mar. 23, 1868	Daniel McMillen	Xenia, Greene Co	170 00
COWS.—FIVE HEAD.					
1. Zaidee, with calf at side, by Don Juan,	Red and white	Sept. 1856	Alexander McKinley	Syracuse, N. Y	165 00
2. Linda Love	Roan	Dec. 14, 1860	Wm. A. Neil, Jr	London, Madison Co	150 00
3. Rela	White	March 8, 1860	Alfred Pringle	California, Madison Co	180 00
4. Volunteeress, in calf by Bon-Ton		May 12, 1861	George Linson	London, Madison Co	165 00
5. Linda's Blossom, with calf at foot	Red	Dec. 1861	A. W. Thurman	Wahoo, Madison Co	250 00

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* Bid to $405.00, at which figure he was withdrawn.

The 10 yearling bulls of this herd brought a total of	$2,495 00
Being an average all round of	249 50
The 8 yearling heifers of this herd brought a total of	$1,675 00
Being an average all round of	209 38
The 5 aged cows of this herd brought a total of	$910 00
Being an average all round of	182 00
The 13 cows and heifers brought a total of	$2,585 00
Being an average all round of about	200 00
The 23 bulls, cows and heifers brought a total of	$5,080 00
Being an average all round of nearly	221 00
The 20 animals (bulls, cows and heifers) of this herd sold at the *first* annual sale, last year, averaged all round	$193 75
Being an advance in average prices this year over last of	$27 25

REMARKS.

The *twenty-three* head of short-horns sold by Robert George Dun, from his "Plumwood Farm" herd, this year, were mostly of *one-year* olds. His brother, John G., having disposed of his surplus at private sale, previous to this time, had none to offer this year.

The numbers sold this year and last by Robert George are nearly equal, but the offerings at the present sale brought a larger average price than at the 1868 sale.

A larger proportion of the animals went out of our county than before, and quite a number to other States.

Of the *twenty-three* head, *three* bulls, *two* heifers and *four* cows were purchased by Madison stock men.

The remaining *fourteen* head were distributed as follows:—*Four* to Greene, *one* to Licking, *one* to Hardin, *one* to Columbiana, and *one* to Franklin county, in this State. The other *five* went—*three* to Parke county, Indiana, and *two* to Syracuse, New York.

This *second* sale attracted a large number of stock men from counties contiguous and remote in Ohio, and quite a respectable number from other States, desiring to obtain animals from this large and well known Madison county herd, with which to improve and cross upon other herds, and as nucleus of future herds, in other sections.

This "Plumwood Farm," estate comprises nearly *three thousand acres*, and is one of *five* similar ones in that Darby Plains section of our county, owned by the brothers Dun—John G., Robert George, Walter A., and James—the three first owning large short-horn herds, and Walter A., beside being extensively engaged in thorough-bred horse breeding, being the owner of "the noted Breckenridge," and other animals—mares and filleys—of note and character.

The *fifth* estate is owned by Judge Thurman, brother-in-law of the Messrs. Dun, and on which his eldest son has but lately removed from Columbus, and become in fact a Madison agriculturist and stock breeder.

These brothers, we understand, are fully determined to maintain this annual sale system, so auspiciously begun, of each year, offering their choice young animals to purchasers, that all desiring may thus have opportunity to obtain superior stock, at popular prices, and on most favorable terms of payment.

REPORT ON COMMERCIAL FERTILIZERS.

BY PROF. S. W. JOHNSON,
OF THE SHEFFIELD SCIENTIFIC SCHOOL.

SHEFFIELD LABORATORY, YALE COLLEGE,
New Haven, Conn., April 10th, 1869.

T. S. GOLD, *Secretary Connecticut Board of Agriculture:*

DEAR SIR:—In accordance with the arrangement made with you in October last, I have had analyses of sixteen samples of commercial fertilizers, executed in my Laboratory under my immediate supervision, by my assistant, Mr. W. O. Atwater, A. M. The analyses have not extended to the estimation of all the ingredients of the samples examined, but have included those substances most important for judging of their commercial value. In every instance, the determinations have been duplicated and the figures given are the average of the closely according results.

The item "moisture" represents water expelled by exposure to the heat of 212° Farenheit, as long as loss of weight occurred.

"Organic and Volatile Matters" include, either water in chemical combination not expelled by a boiling heat, or organic (animal and vegetable) substances destructible by high temperatures, or ammonia salts, or lastly free sulphuric acid, as the case may be. It being necessary to ignite every sample in order to remove organic matters which would interfere with subsequent operations, the amount of loss by exposure to a red heat is ascertained, and the figures here are reproduced, since they often give useful indications of the genuineness of a fertilizer or the mode of its preparation.

"Sand and Insoluble Matters," *i. e.* matters insoluble in acids, can scarcely be excluded altogether from any fertilizer which is manufactured on a large scale. When their quantity exceeds a few per cent. the fact indicates that coarse and cheap materials are used, or that carelessness is allowed in the preparation. When a large amount of sand and insoluble matter exists in a substance sold as a fertilizer, it points usually to fraud, unless the material is furnished at a quite low price.

"Soluble Phosphoric acid" is the phosphoric acid which is taken up by cold water.

"Bone phosphate of lime" is calculated by multiplying total phosphoric acid by 13 and dividing the product by 6. The statement of its quantity is useful for comparing with other analyses, as of bone-dust for example, whose percentage of phosphoric acid is not given directly.

"Phosphate of Iron and Alumina" are commonly thought to be much less soluble or active than phosphate of lime. When a fertilizer contains iron and alumina its phosphoric acid may exist partially or entirely in combination with these bases, and hence the fact should appear in the statement of its composition. In the process of analysis, when the sample contains little iron and alumina and much phosphoric acid, the whole of the former, together with a portion of the latter, are separated in the form of phosphate of iron and alumina. The quantities of these phosphates, thus obtained, are given. About one-half of these phosphates is phosphoric acid, and one-half oxide of iron and alumina. A small quantity of these phosphates thus appearing as a result of the analytical process is a guarantee that the sample contains but a little iron and alumina, and that, in general, its phosphates are those of lime.

"Nitrogen" is the element which gives value to the animal matter of bones, flesh, guano, &c. It is the active ingredient of ammonia and of nitrates. Its significance is essentially the same as that of the term "potential ammonia" formerly employed. In fact, that part of the nitrogen of a fertilizer which does not already exist in the form of ammonia may pass partially or entirely into ammonia by decay, or alteration in the soil.

"Ammonia equivalent to Nitrogen."—Fourteen parts of nitrogen are contained in and are equivalent to seventeen parts of ammonia. It having been formerly the custom to speak of the nitrogen of a fertilizer as ammonia or potential ammonia, it is convenient to specify the amount of ammonia that corresponds to the nitrogen. It must be remembered, however, that many excellent fertilizers like fish guano contain, or may contain, no ammonia actually formed, and it is therefore best to compare them by their nitrogen.

The valuation is not intended to fix, in all cases, the proper selling price of a fertilizer. It may, however, always serve for comparing together the money value of two or more manures, and so nearly represents commercial worth that the farmer will not often err in refusing to lay out his money for any article whose cost much exceeds the calculated value.

The valuation is properly based upon the cost of the active and valuable ingredients of commercial manures as obtained from the cheapest standard sources. Without going into details of the calculations I will state that the prices which I employed in my reports to the Connecticut State Agricultural Society in the years 1857, 1858, and 1859, *when referred to the gold standard*, are not far from those which result from computing the present market cost of the commercially valuable elements of standard manures.

I have, therefore, retained those values, and their use has the advantage of rendering it easy to compare together the present and the former worth of various fertilizers to which our citizens have become attached by the long and profitable employment of them.

The values are as follows:

	Per pound.
Potash	4 cents.
Phosphoric acid, insoluble in water	4½ cents.
Phosphoric acid, soluble in water	12½ cents.
*Nitrogen	17 cents.

As to potash, this substance has not been looked for except in one instance, in which it is obviously the chief valuable ingredient present. Unless purposely added it can hardly be contained in any manufactured fertilizer; and of native fertilizers, in which it exists to a notable degree, but two or three are in the market as concentrated manures.

We obtain the calculated value of a fertilizer by multiplying the percentages of potash, phosphoric acid and nitrogen by the values per pound of these elements respectively, the sum of these products is the calculated value per one hundred pounds, and this taken twenty times is the value per ton. We exclude the other ingredients of a fertilizer, viz., the lime, sulphuric acid, &c., &c., from the calculation, for the following reasons: First, the valuation is intended to be only approximate; and second, it is therefore useless to go into nice details with matters whose price must be reckoned in fractions of cents, when especially, third, the purchaser may obtain them in other forms without risk of deception. By adding to the gold price thirty per cent. we convert it into the present equivalent in currency.

I give below the analyses and valuation of each sample separately, and finally a tabulated statement of the same.

Yours, very truly,
SAMUEL W. JOHNSON.

ANALYSES—NO. 1.

Moisture	7.63
Organic and volatile matters	57.22
Sand and insoluble matters	7.69
Soluble phosphoric acid	None.
Total phosphoric acid	9.24
Phosphate of iron and alumina	1.13
Bone phosphate of lime, equivalent to phosphoric acid	16.43
Nitrogen	6.46
Ammonia, equivalent to nitrogen	7.84

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* In my reports referred to, ammonia was valued at fourteen cents. This corresponds to the above figures.

VALUATION.

Value of insoluble phosphoric acid	$8.28
Value of nitrogen	22.12
Total value per ton, *gold*	$30.40

This, obviously a "Fish Guano," is rather coarse, containing many unbroken fish-bones, which are, however, thin and in a condition to disintegrate readily when brought into the soil. The per centage of phosphoric acid is the same as that found by me in the Quinnipiac Company's fish guano ten years ago, while the quantity of nitrogen is about one per cent. greater.

Name—Fish guano (in bags). Cost—$45 per ton, net. Manufactured by the Quinnipiac Company. Sample furnished by William B. Johnson & Co., New Haven.

No. 2.

Moisture	4.73
Organic and volatile matters	13.54
Sand and insoluble matters	3.88
Soluble phosphoric acid	None.
Insoluble phosphoric acid	19.18
Total phosphoric acid	19.18
Phosphate of iron and alumina	.35
Bone phosphate of lime, equivalent to phosphoric acid	41.56
Nitrogen	1.38
Ammonia, equivalent to nitrogen	1.68

VALUATION.

Value of insoluble phosphoric acid	$17.26
Value of nitrogen	4.79
Total value per ton, *gold*	$22.05

This fertilizer is of a light gray color, very dry, and reasonably fine, though containing a considerable proportion of tough lumps of the size of peas. It has a slight odor of animal matter. Besides phosphate, it contains a good deal of carbonate of lime.

Name—Baugh's superphosphate, Philadelphia. Cost—$60 per ton, net, in bags. Sample furnished by William B. Johnson & Co., New Haven.

No. 3.

Moisture	16.99
Organic and volatile matters	19.75
Sand and insoluble matters	1.67
Soluble phosphoric acid	3.19
Insoluble phosphoric acid	16.16
Total phosphoric acid	19.35
Phosphate of iron and alumina	1.39
Bone phosphate of lime, equivalent to phosphoric acid	41.90
Nitrogen	2.00
Ammonia, equivalent to nitrogen	2.43

VALUATION.

Value of soluble phosphoric acid	$7.98
Value of insoluble phosphoric acid	14.54
Value of nitrogen	6.80
Total value per ton, *gold*	$29.32

A "superphosphate" of good condition as regards fineness and handling. Color, dark brownish-gray, being a mixture of black, brown and gray lumps and powder. Odor, musty.

Name—Stagg's superphosphate, Stratford, Conn. Cost—$65 per ton, net, in bags. Sample furnished by William B. Johnson & Co., New Haven.

No. 4.

Moisture	17.84
Organic and volatile matters	36.40
Sand and insoluble matters	1.86
Soluble phosphoric acid	7.91
Insoluble phosphoric acid	4.96
Total phosphoric acid	12.87
Phosphate of iron and alumina	2.09
Bone phosphate of lime, equivalent to phosphoric acid	27.89
Nitrogen	2.31
Ammonia, equivalent to nitrogen	2.80

VALUATION.

Value of soluble phosphoric acid	$19.78
Value of insoluble phosphoric acid	4.46
Value of nitrogen	7.85
Total value per ton, *gold*	$32.09

A superphosphate of good texture; color, grayish black; has the oder produced by the action of oil of vitriol on organic matters.

Name—E. F. Coe's Ammoniated Superphosphate, Williamsburg, N. Y. Cost—$60 per ton, net, in bags. Sample furnished by Robert B. Bradley & Co., New Haven.

No. 5.

Moisture	24.47
Organic and volatile matters	29.47
Sand and insoluble matters	3.01
Soluble phosphoric acid	12.88
Insoluble phosphoric acid	1.81
Total phosphoric acid	14.69
Phosphate of iron and alumina	1.16
Bone phosphate of lime, equivalent to phosphoric acid	31.56
Nitrogen	3.97
Ammonia, equivalent to nitrogen	4.82

VALUATION.

Value of soluble phosphoric acid	$32.20
Value of insoluble phosphoric acid	1.62
Value of nitrogen	13.50
Total value per ton, *gold*	$47.32

A black superphosphate, rather lumpy from moisture, but breaks readily to fine powder. Has an empyreumatic odor, and contains fine, white, glistening crystals, probably of sulphate of ammonia.

Name—Russell Coe's ammoniated bone superphosphate, Linden, N. J. Cost—$56 per ton, net, in barrels. Sample furnished by Southmayd & Gardiner, Middletown.

No. 6.

Moisture	22.43
Organic and volatile matters	35.63
Sand and insoluble matters	5.82
Soluble phosphoric acid	3.93
Insoluble phosphoric acid	8.64
Total phosphoric	12.57
Phosphate of iron and alumina	1.43
Bone phoshate of lime, equivalent to phosphoric acid	27,24
Nitrogen	2.90
Ammonia, equivalent to nitrogen	3.52

VALUATION.

Vulue of soluble phosphoric acid	$9.82
Value of insoluble phosphoric acid	7.78
Value of nitrogen	9.86
Total value per ton, *gold*	$27.46

This sample is a superphosphate, containing fish bones, has a brown-black color and good texture.

Name—Mapes' superphosphate. Cost—$60 per ton in barrels. Sample furnished by Wheeler & Howes, East Bridgeport.

No. 7.

Moisture	9.80
Organic and volatile matters	18.58
Sand and insoluble matters	49.51
Soluble phosphoric acid	None.
Total phosphoric acid	2.17
Phosphate of iron and alumina	
Bone phosphate of lime, equivalent to phosphoric acid	4.70
Nitrogen	.11
Ammonia, equivalent to nitrogen	.14

VALUATION.

Value of phosphoric acid	$1.95
Value of nitrogen	.38
Total value per ton, *gold*	$2.33

Appears to be a "poudrette;" contains fragments of wood, coal and other refuse, and forty-nine and a half per cent. of sand and matters insoluble in acids. The phosphoric acid is associated with much more than sufficient iron and alumina to form insoluble phosphates. Although the sample contains but eleven one-hundredths of a per cent. of nitrogen, it has a decided odor of ammonia. This fact shows strikingly how little dependence can be placed on the indications of smell. The pungency of ammonia is so powerful as to give a highly exaggerated idea of its quantity. The sample is of a dark, brownish-black color, but contains a few white fragments of plaster (sulphate of lime), which, though much talked of as a fixer of ammonia, acts, as every chemist knows, in the opposite sense under certain conditions. The mechanical condition is good.

Name—Lodi double refined poudrette, New York. Cost—$28.00 per ton. Sample from Rodney Kellogg, Hartford.

No. 8.

Moisture	3.40
Organic and volatile matters	25.41
Sand and insoluble matters	53.43
Soluble phosphoric acid	None.
Total phosphoric acid	2.32
Phosphate of iron and alumina	
Bone phosphate of lime, equivalent to phosphoric acid	5.03
Nitrogen	.10
Ammonia, equivalent to nitrogen	.13

VALUATION.

Value of phosphoric acid	$2.09
Value of nitrogen	.34
Total value per ton, *gold*	$2.43

The remarks upon No. 7 apply very closely to this sample, with the single difference that this is much coarser than the last. Its composition and calculated value are as good as identical with No. 7.

Name—Lodi poudrette, New York. Cost—$2.50 per barrel. Sample from Rodney Kellogg, Hartford.

No. 9.

Moisture	11.52
Organic and volatile matters	4.42
Sand and matters insoluble in water	2.35
Nitrate of potash (saltpeter, containing nitric acid 2.90 per cent.)	7.45
Sulphate of potash	11.39
Sulphate of soda	22.52
Chloride of sodium	38.75
Chloride of magnesium	1.42
Chloride of calcium	trace.
	99.82
In the above there is potash	9.63
In the above there is nitrogen	1.04

VALUATION.

Value of potash	$7.70
Value of nitrogen	3.53
Total value per ton, *gold*	$11.23

In the above statement the nitric acid is assumed to be united with potash, and the remaining potash to exist as sulphate. It is equally correct to suppose that the nitric acid is united to soda, and that the potash exists in the form of chloride of potassium.

On this view the analysis will read as follows:

Moisture	11.52
Organic and volatile matters	4.42
Sand and matters insoluble in water	2.35
Nitrate of soda	6.26
Sulphate of soda (glauber-salt)	31.77
Chloride of potassium	15.27
Chloride of sodium	26.81
Chloride of magnesium	1.42
Chloride of calcium	trace.
	99.84

In 2,000 pounds of this material we have either, according to the first statement, in round numbers,

Saltpeter (nitrate of potash)	150 lbs.
Sulphate of potash	228 "
Glauber-salt (sulphate of soda)	450 "
Common salt (chloride of sodium)	775 "

Or, agreeably to the latter mode of representing this analysis,

Chili saltpeter (nitrate of soda)	125 lbs.
Chloride of potassium	306 "
Glauber-salt	635 "
Common salt	536 "

The first statement is given in consideration of the probability that the material in question is a waste product of the refining of saltpeter, and serves to show how much of this substance remains in it. But, whether regarded chemically or agriculturally, the two statements represent the same thing, for they both involve the same quantities of nitric and sulphuric acid, as well as of potash, soda and chlorine. The second statement has this use, that it enables us to compare the fertilizer in question with two standard commercial articles.

The value of nitrogen in the form of nitric acid is somewhat greater than that of nitrogen in the condition of ammonia, or of any animal matter. This is in accordance with practical field trials, as well as with the most accurate experiments in the laboratory. It is therefore well to inquire at what cost the ingredients of this fertilizer can be procured in the market. Nitrate of soda, of which inexhaustible supplies exist in South America, now costs in New York $5.75, gold, per hundred pounds, when purchased in quantities of a ton or so. The commercial article contains ninety-five per cent. of the pure nitrate. The pure substance costs, allowing for five per cent. impurity, $6.05 per hundred weight. The 125 pounds of nitrate in fertilizer No. 9 are accordingly worth $7.56, gold. Chloride of potassium is now sent into commerce in large quantities, from the mines of Stassfurt, Germany. The commercial article contains eighty per cent. of the pure substance, and costs $2.96, gold, per hundred pounds. Allowing for twenty per cent. impurity, the pure substance costs $3.75 per hundred pounds. The 306 pounds in 2,000 pounds of our fertilizer are then worth $11.47. This sum added to $7.56, the cost of the nitrate, makes the value per ton amount to $19.03, gold, so far as depends upon the nitrate of soda and the chloride of potassium. The fertilizer contains a large quantity of glauber-salt and of common salt, which, were they separated in a pure state, would be worth $15.00, currency, or thereabouts, but these substances can not be allowed to figure at this price in our valuation, for the reason that it will not pay to employ them as fertilizers at anything like the prices which they bring for their ordinary uses. We can not, in fact make a just valuation of these ingredients for a fertilizer until we have a considerable consumption of them in their cheapest forms as fertilizers, so that they can be bought at nearly their real value.

The valuation based on the present cost of nitrate of soda is too high for ordinary circumstances. Nitrate of soda is just now extraordinarily enhanced in price from the fact that the port of Iquique, whence it is shipped, was destroyed by the recent earthquakes. Its price has been, and will doubtless soon be again, $3.75, gold, per hundred pounds. Adopting this standard price, the cost of our fertilizer would be reduced $4.00, and would become $15.00, gold, per short ton. Again, our estimate of potash, drawn from chloride of potassium, is perhaps too high, agriculturally considered, because this substance is a concentrated product valuable for other than fertilizing purposes. The commercial article contains, or corresponds to, about fifty per cent. of potash, which, accordingly, when purchased as chloride in our sea-ports, costs $7.50, gold, per hundred pounds. But crude sulphate of potash, guaranteed to contain ten-twelfths per-cent. of potash, is sold at Stassfurt for one-half thaler per fifty kilograms, equal to $6.54, gold, per 2,000 pounds. The cost of potash in this form at Stassfurt is but $2.96, gold, per hundred pounds, avoirdupois. The chloride of potassium itself is sold at Stassfurt at such a rate that its potash costs there but $3.50, gold, per hundred pounds.

At what cost potash can be imported into this country in these crude forms for agricultural purposes, the future must determine. The above statements, derived from the circular of Dr. Frank's Potash Works, show that our estimate of potash at four cents, gold, per pound, leaves a margin of twenty-five per cent. for cost of freight, &c., between Stassfurt and our ports, which is doubtless too little for so crude and bulky an article.

The cost of nitrogen in the form of nitrates is calculated by dividing the cost of nitrate of soda per hundred pounds by its per centage of nitrogen, which is 16.4. At present cost the pound of nitrogen in this form costs $0.37, gold; at the old standard price of nitrate of soda the cost per pound was $0.24, gold. We see that nitrogen in the form of nitrates costs much more when procured, say, as fish guano. We must, as already hinted, allow it a higher agricultural value, and therefore a higher commercial value, so that the valuation given on page 216 should not be applied rigorously. In the case of this fertilizer we should say that $15.00 would be a more just valuation than $11.23. As a manufacturing refuse it should be afforded cheaply, since it is worth nothing for other than fertilizing purposes.

This material has the grain and general aspect of dirty and moist brown sugar, save that its color is less red. It has a saltish taste, and dissolves freely in water, with exception of a little less than *three per cent.* of impurities.

Name.—Saltpetre Waste; refuse from powder mills. Cost—$35.00 per ton. Sample from Rodney Kellogg, Hartford.

No. 10.

	1869.	1858.	1859.
Moisture	7.41	9.24	9.05
Organic and volatile matters	85.84	86.45	83.55
Sand and insoluble matters	1.87	0.75	1.00
Soluble phosphoric acid	none.		
Total phosphoric acid	2.48	2.04	1.97
Phosphate of iron and allumina	.51		
Bone phosphate of lime, equivalent to phosphoric acid	5.37	4.42	4.27
Nitrogen	4.67	4.32	4.04
Ammonia, equivalent to nitrogen	5.31	5.48	4.90

VALUATION.

Value of phosphoric acid	$2.23		
Value of nitrogen	14.95		
Total value per ton, *gold*	$17.18	$17.20	$15.50

This appears to be ground castor pomace. Its composition is compared above with that of the same article as sent into market in 1858 and 1859, and its value is seen to remain unaltered.

Name.—Castor Pomace. Cost—$35.00 per ton. Sample from Rodney Kellogg, Hartford.

No. 11.

Moisture	9.75
Organic and volatile matters	32.62
Sand and insoluble matters	7.17
Soluble phosphoric acid	none.
Total phosphoric acid	9.48
Phosphate of iron and alumina	1.30
Bone phosphate of lime, equivalent to phosphoric acid	20.54
Nitrogen	1.61
Ammonia, equivalent to nitrogen	1.96

VALUATION.

Value of insoluble phosphoric acid	$8.49
Value of nitrogen	5.49
Total value per ton, *gold*	$13.98

This fertilizer is, to judge from its offensive odor, prepared from slaughter-house offal, or similar refuse. It is mostly a fine powder, of a brownish gray color, with an admixture of white lumps of plaster of Paris, and also, apparently of bone.

Name.—Baugh's Bone Fertilizer, Chicago, Illinois. Cost—$50.00 per ton. Sample from Allen & Williard, Hartford.

No. 12.

Moisture	12.90
Organic and volatile matters	25.82
Sand and insoluble matters	3.70
Soluble phosphoric acid	.30
Insoluble phosphoric acid	15.95
Total phosphoric acid	16.25
Phosphate of iron and alumina	.81
Bone phosphate of lime, equivalent to phosphoric acid	35.21
Nitrogen	2.13
Ammonia, equivalent to nitrogen	2.59

VALUATION.

Value of soluble phosphoric acid	$0.75
Value of insoluble phosphoric acid	14.35
Value of nitrogen	7.24
Total value per ton, *gold*	$22.34

This fertilizer consists, for the most part, of a fine powder or of lumps that crush easily. It contains some fragments of stone, and bits of charcoal, also pieces of bone, which are soft apparently from the action of an acid. The hair of cattle is also seen in it, and it has a pungent odor of ammonia.

Name.—Lloyd's Superphosphate, Providence, R. I. Cost—$58.00 per ton. Sample from Allen & Williard, Hartford.

No. 13.

Moisture	6.43
Organic and volatile matters	25.89
Sand and insoluble matters	4.53
Soluble phosphoric acid	1.42
Insoluble phosphoric acid	9.26
Total phosphoric acid	10.68
Phosphate of iron and alumina	1.57
Bone phosphate of lime, equivalent to phosphoric acid	23.14
Nitrogen	2.01
Ammonia, equivalent to nitrogen	2.44
Potash	3.55

VALUATION.

Value of soluble phosphoric acid	$3.50
Value of insoluble phosphoric acid	8.33
Value of nitrogen	6.83
Value of potash	2.84
Total value per ton, *gold*	$21.50

Is a fine powder of uniform gray color.

Name.—Wilson's Tobacco Grower, Providence, R. I. Cost—$80.00 per ton. Sample from Allen & Willard, Hartford.

No. 14.

Moisture	10.40
Organic and volatile matters	20.80
Sand and insoluble matters	17.24
Soluble phosphoric acid	.79
Insoluble phosphoric acid	8.16
Total phosphoric acid	8.95
Phosphate of iron and alumina	4.37
Bone phosphate of lime, equivalent to phosphoric acid	19.39
Nitrogen	.52
Ammonia, equivalent to nitrogen	.63

VALUATION.

Value of soluble phosphoric acid	$1.98
Value of insoluble phosphoric acid	7.34
Value of nitrogen	1.77
Total value per ton, *gold*	$11.09

Is mostly a fine, light-brown powder, or easily crushed lumps; contains considerable lime as carbonate.

Name—Home made superphosphate, B. B. Plumb, Trumbull, Conn Cost, —. Sample furnished by B. B. Plumb, Trumbull, Conn.

No. 15.

Moisture	6.47
Organic and volatile matters	42.96
Sand and insoluble matters	5.81
Soluble phosphoric acid	1.38
Insoluble phosphoric acid	13.16
Total phosphoric acid	14.54
Phosphate of iron and alumina. Much iron	—
Bone phosphate of lime, equivalent to phosphoric acid	31.50
Nitrogen	2.70
Ammonia, equivalent to nitrogen	3.28

VALUATION.

Value of soluble phosphoric acid	$3.45
Value of insoluble phosphoric acid	11.84
Value of nitrogen	9.18
Total value per ton, *gold*	$24.47

A moderately fine powder of dark grey color.

Name—Bradley's superphosphate. Cost, $70 per ton. Sample from Silas Tiffany, Hampton; manufactured in Boston.

No. 16.

Moisture	2.49
Organic and volatile matters	29.92
Sand and insoluble matters	4.09
Soluble phosphoric acid	5.75
Insoluble phosphoric acid	10.38
Total phosphoric acid	16.13
Phosphate of iron and alumina	.49
Bone phosphate of lime, equivalent to phosphoric acid	34.96
Nitrogen	1.68
Ammonia, equivalent to nitrogen	2.04

VALUATION.

Value of soluble phosphoric acid	$14.38
Value of insoluble phosphoric acid	9.34
Value of nitrogen	5.71
Total value per ton, *gold*	$29.43

Consists of small white lumps and powder. The lumps, for the most part, admit of crushing, and contain a nucleus of bone. Is apparently a raw bone superphosphate.

Name—Atwood's superphosphate. Cost, $70 per ton. Sample from Roger S. Williams, Hampton; manufactured in Mansfield.

TABULATED RESULTS.

ANALYSIS.	1.	2.	3.	4.	5.	6.	7.	8.	9.	10.	11.	12.	13.	14.	15.	16.
Moisture	7.63	4.73	16.99	17.84	24.47	22.43	9.80	3.40	11.52	7.41	9.75	12.90	6.43	10.40	6.47	2.49
Organic and volatile matters	57.22	13.54	19.75	36.40	29.47	35.63	18.58	25.41	4.42	85.84	32.62	25.83	25.89	20.80	42.96	29.92
Sand and insoluble matters	7.69	3.83	1.67	1.83	3.01	5.82	49.51	53.43	2.35	1.87	7.17	3.70	4.53	17.24	5.81	4.09
Soluble phosphoric acid	None.	None.	3.19	7.91	12.88	3.93	None	None.	......	None.	None.	.30	1.42	.79	1.38	5.75
Insoluble phosphoric acid	9.24	19.18	16.16	4.96	1.81	8.64	2 17	2.32	......	2.48	9.48	15.95	9.26	8.16	13.16	10.38
Total phosphoric acid	9.24	19 18	19.35	12.87	14.69	12.57	2.17	2.32	......	2.48	9.48	16.25	10.68	8.95	14.54	16.13
Phosphates of iron and alumina	1.13	.35	1.39	2.09	1.16	1.43	......	......	......	.51	1.30	.81	1.57	4.37	......	.49
Bone phosphate of lime, equivalent to phosphoric acid	16.43	41 56	41.90	27.89	31.83	27.24	4.70	5.03	......	5.37	20.54	35.21	23.14	19.39	31 50	34.96
Nitrogen	6.46	1.38	2.00	2.31	3.97	2.90	.11	.10	1.04	4.37	1.61	2.13	2.01	.52	2.70	1.68
Ammonia, equivalent to nitrogen	7.84	1.68	2.42	2 80	4.82	3.52	.14	.13	......	5.31	1.96	2.59	2.44	.63	3.28	2.04
VALUATION.																
Value of soluble phosphoric acid	......	......	$7 98	$19 78	$32 20	$9 82	......	......	......	......	......	$ 75	$3 55	$1 98	$3 45	$14 38
Value of insoluble phosphoric acid	$8 28	$17 26	14 54	4 46	1 62	7 78	$1 95	$2 09	......	$2 23	$8 49	14 35	8 33	7 34	11 84	9 34
Value of nitrogen	22 12	4 79	6 80	7 85	13 50	9 86	38	34	$3 53	14 95	5 49	7 24	6 83	1 77	9 18	5 71
Total value per ton (gold)	$30 40	$22 05	$29 32	$32 09	$47 32	$27 46	$2 33	$2 43	$11 23	$17 18	$13 98	$22 34	$18 71	$11 09	$24 14	$29 43

ANALYSIS.—No. 1, Fish Guano, $45 per ton, in currency. No. 2, Baugh's Superphosphate, $60 per ton. No. 3, Stagg's Superphosphate, $65 per ton. No. 4, E. F. Coe's Superphosphate, $60 per ton. No. 5, Russell Coe's Superphosphate. $56 per ton. No. 6, Mapes' Superphosphate, $60 per ton. No. 7, Lodi Double Refined Poudrette, $28 per ton. No. 8, Lodi Poudrette, $2.50 per barrel. No. 9, Saltpetre Waste, $35 per ton. No. 10, Castor Pomace, $35 per ton. No. 11, Baugh's Bone Fertilizer, $50 per ton. No. 12, Loyd's Superphosphate, $58 per ton. No. 13, Wilson's Tobacco Grower, $80 per ton. No. 14, Home-made Superphosphate. No. 15, Bradley's Superphosphate, $70 per ton. No. 16, Atwood's Superphosphate, $70 per ton.

REMARKS BY THE SECRETARY.

These samples, analysed by Prof. Johnson, were received by him without their names or any mark except a number. Most of them were taken, under my inspection, from the bags or barrels in the storehouses of the dealers, and were just the article they had on sale. These packages were delivered personally, or forwarded by express, so that he could know nothing of their origin or pretensions.

The report of the value of these fertilizers, as estimated from their soluble and insoluble phosphoric acid and nitrogen, is based upon the cheapest form in which these substances can be procured, and not upon their actual worth to the farmer. The table shows their relative money value, but their actual value to the farmer depends upon a variety of circumstances, differing in each several case, according to the composition and constitution of the soil, its culture, the season and the kind of crop.

Again, in these articles the great bulk is made up of materials which, though very cheap, vary very much in different samples—in some cases being water, in others sand, or carbonate and sulphate of lime. Every farmer can tell at what price he can purchase a hundred pounds of any of these materials, and that is what they are worth to him to buy; what they are worth to him as manure he must estimate by experiment.

As this work of analysing commercial fertilizers was begun in 1856–57 by Prof. Johnson, as chemist to the Connecticut State Agricultural Society, the reader is referred for various explanations of terms and processes to the transactions of the Society for 1858.

In Maine, the subject of commercial fertilizers has been considered of sufficient importance to engage the attention of the Legislature, and an act has been passed requiring every package to be marked with the per centage of soluble and insoluble phosphoric acid, and of ammonia, which it contains, with suitable penalties for neglecting this requirement, or for selling an article which does not equal the record. The vast quantities now used, and the temptation to fraud is so great, it seems wise to protect the farmer from imposition by legislative action. The very great difference in the value of these fertilizers, as shown by the table, compared with their cost, is such that it is a simple problem to figure out which are the cheapest, and with an analysis on each bag or barrel, it would be easy to compute their value per hundred pounds or per ton. A law of this kind in this State would help very much in the work we have undertaken of banishing worthless fertilizers, by requiring each to stand on its own merits.

EXPERIMENTS IN AGRICULTURAL CHEMISTRY.

BY R. C. KEDZIE,

PROFESSOR OF CHEMISTRY IN MICHIGAN AGRICULTURAL COLLEGE.

The Professor of Agricultural Chemistry, to whom was assigned, by the Honorable Board of Agriculture, certain experiments with composts of muck and night-soil, and upon the relations of the volatile constituents of manures to vegetable growth, submits the following report:

The compost of muck and night-soil was formed April 12th, using three parts of muck and one of night-soil. The compost was thoroughly turned and mixed May 4th, again May 18th, and finally May 31st.

The ground upon which the compost was used in prosecuting the experiment was a piece of light, sandy soil, in the vegetable garden. It had not been manured in two years past, and was greatly exhausted by previous cropping. The ground was plowed and harrowed May 31st, preparatory to planting the corn. It was carefully measured off into rows, three and one-half feet apart each way.

The seed corn used was a white dent. It was soaked in simple water for twenty-four hours previous to planting. It was planted June first. Seven rows of the corn received two shovel fulls of the compost in each hill; the ground and compost being mixed before planting. It was afterwards found that the mixing was imperfectly done, and in consequence of the large amount of the compost underlying the corn, the growth was unhealthy for several weeks after it came up. The result would probably have been more satisfactory if half the amount of compost in each hill had been used, and the mixing more thoroughly performed.

The ninth row received no manure at or preceding the time of planting, but a small handful of plaster was scattered over each hill June 12th. The tenth row was treated in the same manner, except that it received on the 12th of June a teaspoonful of salt instead of plaster. The eleventh and twelfth rows received no dressing of any kind, serving as a basis of comparison for the rest.

To test the effect of the volatile constituents of manures, nine jugs (1½ gallons each) were filled two-thirds full of manure, six with horse-dung, two with hen-dung, and one with urine, and sufficient water added to the dry manure to wet it thoroughly. In the mouth of each jug a lead tube ¾ inch diameter and 20 inches long, was fastened air-tight, and the open extremity inserted in the middle of a hill of corn, passing down three inches below the surface, so that the volatile products of the fermentation of the manure might be conveyed to the soil sustaining the hill of corn, and its effects upon the growth of the corn might thus be ascertained.

These jugs were placed by their respective hills June 6th, as soon as the corn came up, and were left undisturbed during the whole period of the growth.

The corn was cultivated June 14th, and hoed June 16th; cultivated the second time June 22d, and hoed June 25th. It was cut September 26th and 27th, and husked October 16th, and both corn and stalks carefully weighed, with the following results:

The two rows without any dressing gave 50 lbs. 8 oz. corn, and 137 lbs. 8 oz. stalks, or 27.29 bushels per acre of corn, and 5,201.61 lbs. stalks.

The row top-dressed with salt gave 21 lbs. 4 oz. of corn, and 85 lbs. of stalks, or at the rate of 22.96 bushels per acre of corn, and 6,430 lbs. of stalks.

The row receiving a top-dressing of plaster gave 18 lbs. 12 oz. of corn, and 69 lbs. 8 oz. of stalks; at the rate of 20.26 bushels of corn, and 5,257 lbs. of stalks per acre.

The nine hills with the jugs gave 9 lbs. 7 oz. of corn, and 22 lbs. 12 oz. of stalks, or at the rate of 53.27 bushels per acre, and 4,021.3 lbs. stalks.

The seven rows receiving the compost muck and night-soil yielded 486 lbs. 8 oz. of corn, and 710 lbs. of stalks, or at the rate of 75.33 bushels of corn per acre, and 7,668 lbs. of stalks.

In these experiments the soil seems to have been so destitute of organic matter as to have derived no benefit from the top dressing of salt and plaster. The compost of muck and night-soil caused a marked improvement in the growth of the corn—an improvement strikingly evident to the eye, even at a distance, while the corn was growing. The increase of corn was over forty-six bushels per acre, and of stalks 2,466 lbs. The increase of grain per acre from the volatile products of the manure, as shown by the experiments with the jugs, was twenty-six bushels, or a gain of more than 87 per cent.

To test the relative absorption of the volatile products of decomposition in manures, when placed on the surface of the ground or buried beneath it, I instituted the following experiment: I spread upon the surface of the ground, to the depth of one inch, a layer of fresh horse-manure, and another similar layer of hen-manure; I also buried the same quantity of hen-manure in the soil, covering it to the depth of four inches. On the surface of all these plots, thus prepared, I placed a plate containing dilute sulphuric acid, to absorb and retain any ammonia which might be produced by the fermentation of the manure, and which might escape into the air, and thus come in contact with the acid. To confine such volatile matters, and also to protect the acid from the effects of the weather, I placed over each one a barrel inverted.

This experiment was instituted June 12th. While I was enjoying my vacation by a trip up Lake Superior, the covering of the barrel over the manure buried four inches deep in the soil blew off, and that part of the experiment failed.

The contents of the plates under the other barrels were analyzed August 8th, and the quantity of ammonia ascertained in each. The acid in the plate over the horse-manure lying on the surface of the ground contained 1.96 grains of ammonia, or at the rate of 6.44 lbs. per acre. The acid in the plate over the hen-manure contained 3.453 grains of ammonia, or at the rate of 13.8 lbs. per acre. The unfortunate accident to the third barrel prevented any comparison of relative loss by placing on surface or by burying beneath surface.

The importance of settling by definite experiment the questions arising from the relations of volatile matters of manures to vegetable growth, and of absorption by soil when placed on its surface or buried beneath it, would justify repeating and extending these experiments.

EXPERIMENTS IN PRACTICAL AGRICULTURE.

To the President of the Michigan State Agricultural College:

The following report on experiments in practical agriculture, for the year 1866, is respectfully presented:

EXPERIMENTS IN THE APPLICATION OF TOP-DRESSING TO GRASS LANDS.

This is a continuation of the experiments commenced in 1864, and continued in 1865. (See report of Secretary for 1864, page 117, and for 1865, page 235.)

No additional fertilizers have been applied since the commencement of the experiments in 1864.

The first crop this season was cut in the forenoon of July 11th, and put up in small cocks in the afternoon. The cocks were opened July 12th, and hauled to the barn in good order in the afternoon. Care was taken to secure uniformity in the curing of each piece.

The clover, which comprised the largest portion of the crop last year, has nearly all disappeared, the crop of the present year being in the main timothy.

The results this season are given in Table 1, showing for each piece the rate of yield per acre, the gain per acre, the gain per cent., and the kind and amount, per acre, of fertilizers applied in 1864:

TABLE 1.

Subdivisions.	Yield per acre in lbs.	Gain per acre in lbs.	Gain per cent. in lbs.	Kind and amount, per acre, of top-dressings applied in 1864.
No. 1.....	1,388.88	....	.....	None.
No. 2.....	1,720.00	331.12	23.80	Two bushels of Plaster.
No. 3.....	1,602.22	213.34	15.36	Five bushels of Wood Ashes.
No. 4.....	1,780.00	391.12	28.16	Twenty loads of Muck.
No. 5.....	2,157.77	768.89	55.36	Twenty loads of Muck and 3 bus. of salt.
No. 6.....	2,431.11	1,042.23	75.04	Three bushels of Salt.
No. 7.....	2,600.00	1,211.12	87.20	Twenty loads of Horse-manure.
No. 8.....	2,333.33	944.45	68.00	Twenty loads of Cow-manure.

The first crop was quite uniform on each of the subdivisions. The second crop was not cut, as it did not make a uniform growth, and on most of the subdivisions the timothy was replaced to a great extent by weeds that interfered with the further progress of the experiment.

The result of the experiment for the three years (1864, 1865 and 1866) is shown in Table 2, for each subdivision, the total yield per acre, the total gain per acre, the total gain per cent., and the kind and amount per acre, of fertilizers, applied in 1864, at the commencement of the experiment:

TABLE 2.

Subdivisions.	Total yield per acre in pounds.	Total gain per acre in pounds.	Total gain per cent. in pounds.	Kind and amount, per acre, of Fertilizers applied in 1864.
No. 1.	8,74	.....	.....	None.
No. 2.	13,226	4,484	51.29	Two bushels of Plaster.
No. 3.	12,907	4,165	47.64	Five bushels of Wood Ashes.
No. 4.	13,816	5,074	58.04	Twenty loads of Muck.
No. 5.	14,819	6,077	69.51	Twenty loads of Muck and three bushels of Salt.
No. 6.	13,969	5,227	59.79	Three bushels of Salt.
No. 7.	14,986	6,244	71.42	Twenty loads of Horse-manure.
No. 8.	14,564	5,822	66.60	Twenty loads of Cow-manure.

EXPERIMENT IN THE APPLICATION OF MANURES TO CORN.

For the purpose of ascertaining the best method of applying manures, a piece of land of apparently uniform quality was selected, in the north west corner of field No. 5, and divided into plots of one-tenth of an acre each, designated by numbers from one to eight.

The soil, a clay loam, was summer-fallowed in 1864, and sowed to winter wheat, which was harvested the 14th of July, 1865.

Manures were applied as follows:

Plot No. 1.—Five loads of horse-manure plowed under.

Plot No. 2.—Five loads of cow-manure plowed under.

Plot No. 3.—No manure.

Plot No. 4.—Five loads of horse-manure on the surface after plowing, and harrowed in.

Plot. No. 5.—Five loads of cow-manure on the surface, after plowing, and harrowed in.

Plot No. 6.—No manure.

Plot No. 7.—Five loads of horse-manure on the surface after harrowing, and before planting.

Plot No. 8.—Five loads of cow-manure on the surface after harrowing, and before planting.

The plots were plowed on the 15th of May, to the depth of six inches, and planted on the 16th. The corn was of the variety known as white dent, planted in drills four feet apart, running north and south. A space of eight feet was left between the plots, so as to prevent the manure on each plot from affecting the adjoining plots on each side.

The preparation of the soil before planting, and the after cultivation were the same on each plot, and care was taken to have the work performed each day, distributed uniformly over each plot of the experiment.

The corn was cut up and put in stooks on the 22d of September. After the stalks were thoroughly dried, the corn was husked and the stalks and corn were each carefully weighed, with the following results:

TABLE 3.

Plot.	Kind of Manure and mode of applying.	Weight of corn in ear, pounds.	Weight of Stalks, pounds.
No. 1.	Horse-manure plowed under	328½	346
No. 2.	Cow-manure plowed under	310½	330
No. 3.	No manure	291	290
No. 4.	Horse-manure on the surface, dragged in	252	304
No. 5.	Cow-manure on the surface, dragged in	257	260
No. 6.	No manure	231	228
No. 7.	Horse-manure on the surface after dragging	280	356
No. 8.	Cow-manure on the surface after dragging	350	348

Two pieces, No's 3 and 6, were left without manure, as a standard of comparison.

The remarkable difference in the yield of these plots could not have been predicted from an examination of the land before planting.

So far as we were able to judge from a careful inspection of each piece, there was no difference in quality or texture of soil.

Experience has, however, shown that in field experiments such variations in the yield of unmanured plots, are not uncommon, even when a chemical analysis has shown that the elements of the soil are the same in the different plots under experiment.

From this fact it will be seen that it is difficult to obtain a reliable standard of comparison by which the results of field experiments may be tested.

The larger the pieces experimented on, the greater the danger of fallacy from these obscure differences in the properties of soils.

Accuracy can only be secured by a frequent repetition of the experiments, and the unmanured plots should at least equal in number the plots on which the manures are applied.

One of the best methods of determining the relative fertility of experimented plots, would perhaps be, to weigh accurately the preceding crop on each piece that is to be used for experimental purposes.

The standard thus obtained would certainly be of great value, and in connection with a system of small, unmanured plots, frequently repeated, it would add very much to the reliability of results.

I would recommend that the piece of land south of the Boarding Hall, which has been used for experiments in top-dressing grass land, be sowed to oats in the spring, (without manure,) and divided into permanent plots, of one-tenth of an acre; the crop grown upon each to be carefully weighed, and put on record as a standard of comparison for other experiments that are to follow.

EXPERIMENTS IN FEEDING PIGS.

Three Essex sow pigs of the same litter were fed cow's milk for four weeks; the amount consumed being carefully weighed each day, and the pigs weighed each week.

At the commencement of the experiment, July 21st, the pigs were eleven days old; their feed up to this time having been the same as during the experiment.

The results are given in Table 4, showing the weight of the pigs at the beginning of each week, the milk consumed each week, and the gain each week:

TABLE 4.

No. of the Pigs.	1st Week.			2d Week.			3d Week.			4th Week.		
	Weight of pigs July 21st.	Milk consumed, in lbs. and dec.	Gain, in lbs. and tenths.	Weight of pigs July 28th.	Milk consumed, in lbs.	Gain, in lbs. and tenths.	Weight of pigs August 4th.	Milk consumed, in lbs.	Gain, in lbs. and tenths.	Weight of pigs Aug. 11th.	Milk consumed, in lbs.	Gain, in lbs. and tenths.
No. 1	14.50	79.19	11.00	6.25	106.94	3.00	9.25	129.94	3.00	12.25	141.81	4.00
No. 2				9.75		5.50	15.25		3.50	18.75		4.25
No. 3				9.50		5.00	14.50		4.50	19.00		5.75
Total	14.50	79.19	11.00	25.50	106.94	13.50	39.00	129 94	11.00	50.00	141.81	14.00

The following table shows the average amount of milk consumed each week, for each pound of live weight, and the gain per cent. of live weight for each week:

TABLE 5.

1st Week.		2d Week.		3d Week.		4th Week.		Av. for 4 Weeks.	
Average amount of milk consumed for each 1 lb. of live weight of animal.	Gain per cent.	Average amount of milk consumed for each 1 lb. of live weight of animal.	Gain per cent.	Average amount of milk consumed for each 1 lb. of live weight of animal.	Gain per cent.	Average amount of milk consumed for each 1 lb. of live weight of animal.	Gain per cent.	Average amount of milk consumed per week for each 1 lb. of live weight of animal.	Average gain per cent.
lbs.		lbs.		lbs.		lbs.		lbs.	
3.96	75.86	3.32	52.92	2 92	28.20	2.49	28.00	2.98	46.25

From this it is seen that the average amount of feed consumed for each pound of live weight, and also the gain per cent., are constantly diminishing as the animals increase in size.

This agrees with results obtained by Mr. Lawes, in feeding pigs, who found a "rapid decrease in the rate of consumption of food to a given weight of animal as it fattens."

In the following table the average amount of milk required to produce 1 lb. of increase of live weight, is given for each week of the experiment:

TABLE 6.

	1st Week.	2d Week.	3d Week.	4th Week.	Avg. for 4 Weeks.
Average amount of milk consumed to produce 1 lb. of increase of live weight...	7.20	7.92	11.81	10.13	9.25

By referring to Table 4, it will be seen that the gain per week was less in proportion during the third week of the experiment. This is accounted for by a slight derangement of the digestive organs, that was observed during this week, as shown in a tendency to constipation.

This explains the larger amount of milk consumed the third week of the trial, to produce 1 lb. of increase, than was required to produce the same amount of increase the fourth week.

By making a proper allowance for this variation in Table 6, the results would seem to indicate that the amount of feed required to produce a given increase of live weight, is greater as the animals increase in size.

It is to be regretted that the experiment was not continued for a greater length of time. After the 18th of August, it was thought best to furnish the pigs with some vegetable food, in addition to the exclusive milk diet to which they had been restricted.

For want of suitable facilities for weighing the mixed food, the experiment was closed at this date.

Pig No. 1 was sold soon after the close of the experiment.

Pigs No. 2 and 3 have been weighed several times since the close of the experiment, with the following results:

	Aug. 25th.	Sept. 8th.	Dec. 25th.
Pig No. 2 weighed	29 lbs.	42¾ lbs.	139 lbs.
Pig No. 3 weighed	29¾ lbs.	45¾ lbs.	154 lbs.

At the date of the last weighing, it will be seen that the pigs were five and a half months old.

Respectfully submitted,

M. MILES.

Professor of Practical Agriculture in Michigan Agricultural College

COLLEGE FARM, Dec. 28, 1866.

EXPERIMENTS IN THE APPLICATION OF MANURES.

Two acres near the north end of field No. 2 were selected for the purpose of ascertaining the effect of different modes in applying manures. The soil is a friable loam, of apparently uniform character, resting upon a stratum of heavy clay. For several years the field had been used as meadow; the herbage consisting of a mixture of clover, timothy and blue grass. The clover had nearly disappeared during the past season.

Ten pieces were staked off two rods in width and sixteen rods in length. Each piece was designated by a letter, and subdivided into four equal plats, each of which was distinguished by a figure following the letter, as shown in the accompanying plan of the experiment.

In an experiment with manures applied at different seasons of the year, there is danger of fallacy from the varying character of the manures applied to the different plats. As the feed consumed in the bull stables is quite uniform throughout the year, consisting of clover and timothy hay, with a moderate ration of grain, the manure in this experiment was all taken from the "bull yard," and as fermentation had not taken place, it was probably of as uniform quality as could well be obtained.

On the sixth day of December, 1867, six loads of manure, containing about 41 cubic feet each, were hauled to each of the pieces marked G and C, and spread evenly over the surface. On the 21st day of April, 1868, six loads of manure were hauled to the piece marked E, and spread in the same manner as on the plats G and C. The land was all ploughed from the 5th to the 7th of May. The ploughing should have been done in one day, in order to secure uniformity in the condition of the surface, but this part of our plan was interfered with by circumstances beyond our control.

In all subsequent operations of fitting the ground for planting, and in cultivating and hoeing, the same amount of labor was expended on each piece the same day. After ploughing, six loads of manure were spread on each of the pieces marked A and I on the 9th of May. The entire surface was harrowed May 13th. On the 21st of May yellow dent corn was planted on all the pieces alike, in drills running north and south, four feet apart. A cultivator was run twice in a row on the 16th of June, and it was all hand-hoed on the 17th. July 8th it was again cultivated and hoed, and on the 21st of September it was cut up and put in "stooks."

The corn was husked and weighed, on plats No.'s 2, 3 and 4, of each letter, on the 22d of October. The corn on plats No. 1, of each letter, was husked and weighed October 23d. The stalks were all hauled and weighed on the 27th of October. The weather was favorable during the time of husking and hauling, so that the crop was secured in good condition.

On the following plan of the experiment, the weight of the corn in the ear, and the weight of the stalks, in pounds and decimals, is marked on each plat. For convenience of reference, a letter, indicating the time of applying the manure, is prefixed to the letter and number designating the plat.

Plats marked N were not manured.
" " X were manured December 6th, before ploughing.
" " Y were manured April 21st, before ploughing.
" " Z were manured May 9th, on the surface, after ploughing.

PLAN OF THE EXPERIMENT.

TWO RODS.

NORTH.

WEST. FOUR RODS. EAST.

N. K. 1. Corn. 191.50 Stalks. 200.	Z. I. 1. Corn. 217.50 Stalks. 254.	N. H. 1. Corn. 219.50 Stalks. 220.	X. G. 1. Corn. 210.50 Stalks. 210.	N. F. 1. Corn. 211.00 Stalks. 164.	Y. E. 1. Corn. 226.00 Stalks 166.	N. D. 1. Corn. 199.00 Stalks. 128.	X. C. 1. Corn. 245.00 Stalks. 190.	N. B. 1. Corn. 266.50 Stalks. 198.	Z. A. 1. Corn. 285.50 Stalks. 246.
N. K. 2. Corn. 179 50 Stalks. 180.	Z. I. 2. Corn. 202.50 Stalks. 226.	N. H. 2. Corn. 212.50 Stalks. 200.	X. G. 2. Corn. 185.00 Stalks. 160.	N. F. 2. Corn. 182.00 Stalks. 150.	Y. E. 2. Corn. 216.50 Stalks. 174.	N. D. 2. Corn. 190.50 Stalks. 146.	X. C. 2. Corn. 234.50 Stalks. 156.	N. B. 2. Corn. 228.00 Stalks. 184.	Z. A. 2. Corn. 278.50 Stalks. 217.
N. K. 3. Corn. 189.50 Stalks. 140.	Z. I. 3. Corn. 227.50 Stalks. 224.	N. H. 3. Corn. 197.00 Stalks 166.	X. G. 3. Corn. 213.50 Stalks. 164.	N. F. 3. Corn. 197.50 Stalks. 164.	Y. E. 3. Corn. 207.00 Stalks. 180.	N. D. 3. Corn. 201.00 Stalks. 166.	X. C. 3. Corn. 232 00 Stalks. 164.	N. B. 3. Corn. 195.00 Stalks. 154.	Z. A. 3. Corn. 245.50 Stalks. 196.
N. K. 4. Corn. 183.50 Stalks. 184.	Z. I. 4. Corn. 242.50 Stalks. 276.	N. H. 4. Corn. 213 50 Stalks. 240.	X. G. 4. Corn. 209 00 Stalks. 230.	N. F. 4. Corn. 190 50 Stalks. 204.	Y. E. 4. Corn. 212.00 Stalks. 176.	N. D. 4. Corn. 189.50 Stalks. 180.	X. C. 4. Corn. 206.50 Stalks. 176.	N. B. 4. Corn. 206.50 Stalks. 202.	Z. A. 4. Corn. 237.00 Stalks. 202.

SOUTH.

In table No. 1 is given the yield per acre, of corn and stalks, for each plat. The amount of shelled corn is estimated at the rate of seventy pounds of ears for a bushel of shelled corn. The average yield per acre of the subdivisions of each piece are also given. The corn was of fair quality, although, on the whole, it gave rather more than the usual proportion of soft ears.

TABLE No. 1.

YIELD PER ACRE.

Letter and Number of Plat.	CORN.		STALKS.	
	Pounds.	Bushels of Shelled Corn, at 70 lbs. each.	Pounds.	Tons.
Z. A. 1	5610	80.14	4920	2.46
" 2	5570	79.57	4340	2.17
" 3	4910	70.14	3920	1.96
" 4	4740	67.71	4040	2.02
Average	5207	74.39	4305	2.15
N. B. 1	5330	76.14	3960	1.98
" 2	4560	65.14	3680	1.84
" 3	3900	55 71	3080	1.54
" 4	4130	59.00	4040	2.02
Average	4480	64.00	3690	1 84
X. C. 1	4900	70 00	3800	1.90
" 2	4690	67.00	3120	1.56
" 3	4640	66.28	3280	1.64
" 4	4130	59.00	3520	1.76
Average	4590	65.57	3430	1.71
N. D. 1	3980	56.85	2560	1.28
" 2	3810	54.43	2920	1.46
" 3	4020	57.43	3320	1.66
" 4	3790	54.14	3600	1.80
Average	3900	55.71	3100	1.55
Y. E. 1	4520	64.57	3320	1.66
" 2	4330	61.85	3480	1.74
" 3	4140	59.14	3600	1.80
" 4	4240	60.57	3520	1.76
Average	4307	61.53	3480	1.74

TABLE No. 1.—Continued.

Letter and Number of Plat.	CORN.		STALKS.	
	Pounds.	Bushels of Shelled Corn, at 70 lbs. each.	Pounds.	Tons.
N. F. 1	4220	60.28	3820	1.64
" 2	3640	52.00	3000	1.50
" 3	3950	56.43	3280	1.64
" 4	3810	54.43	4080	2.04
Average	3905	55.78	3410	1.70
X. G. 1	4210	60.14	4200	2.10
" 2	3700	52.85	3200	1.60
" 3	4270	61.00	3280	1.64
" 4	4180	59.71	4600	2.30
Average	4090	58.42	3820	1.91
N. H. 1	4390	62.71	4400	2.20
" 2	4250	60.71	4000	2.00
" 3	3940	56.28	3320	1.66
" 4	4270	61.00	4800	2.40
Average	4212	60.17	4130	2.06
Z. I. 1	4350	62.14	5080	2.54
" 2	4050	57.85	4520	2.26
" 3	4550	65.00	4480	2.24
" 4	4850	69.28	5520	2.76
Average	4450	63.57	4900	2.45
N. K. 1	3830	54.71	4000	2.00
" 2	3590	51.28	3600	1.80
" 3	3790	54.14	2800	1.40
"	3670	52.43	3680	1.84
Average	3720	53.14	3520	1.76

A wide range of variation will be noticed in the plats without manure, the greatest yield of corn being on Plat B. 1, which gave at the rate of 76.14 bushels of shelled corn per acre, while the least yield is on Plat K. 2, which gave at the rate of 51.28 bushels of shelled corn per acre. The greatest yield of stalks on the plats without manure, was given by Plat H. 4, at the rate of 2.40 tons per acre, while the least yield was given by Plat D. 1, at the rate of 1.28 tons per acre.

A similar variation will be noticed in comparing the manured plats. From the arrangement of the plats, as will be seen by reference to the plan of the experiment, the results of four distinct experiments are obtained. These are given separately in Table No. 2, together with the averages of the combined experiment, and the gain or loss of the manured plats, when compared with the average of the unmanured plats.

TABLE NO. 2.

Bushels of Shelled Corn and Tons of Stalks, per Acre.

	Plats Unmanured.			Plats manured, May 9th, on the surface after Plowing.			Plats manured Dec. 6th, 1867, and Plowed under in the Spring.			Plats manured April 28th, and Plowed under.		
	Plat.	Bushels of Corn.	Tons of Stalks.	Plat.	Bushels of Corn.	Tons of Stalks.	Plat.	Bushels of Corn.	Tons of Stalks.	Plat.	Bushels of Corn.	Tons of Stalks.
FIRST SERIES.	N. K. 1	54.71	2.00	Z. I. 1	62.14	2.54	X. G. 1	60.14	2.10	Y. F. 1	64.57	1.66
	N. H. 1	62.71	2.20	Z. A. 1	80.14	2.46	X. C. 1	70.00	1.90			
	N. F. 1	60.28	1.64									
	N. D. 1	56.85	1.28									
	N. B. 1	76.14	1.98									
	Average	62.14	1.82		71.14	2.50		65.07	2.00		64.57	1.66
	Increase on Manured Plats				9.00	.68		2.93	.18		2.43	.16

TABLE No. 2.—Continued.

	Plats Unmanured.			Plats manured May 9th, on the surface after Plowing.			Plats manured Dec. 6th, 1867, and Plowed under in the Spring.			Plats manured April 28th, and Plowed under.		
	Plat.	Bushels of Corn.	Tons of Stalks.	Plat.	Bushels of Corn.	Tons of Stalks.	Plat.	Bushels of Corn.	Tons of Stalks.	Plat.	Bushels of Corn.	Tons of Stalks.
SECOND SERIES.	N. B. 2	65.14	1.84	Z. A. 2	79.57	2.17	X. C. 2	67.00	1.56	Y. E. 2	61.85	1.74
	N. D. 2	54.43	1.46	Z. I. 2	57.85	2.26	X. G. 2	52.85	1.60			
	N. F. 2	52.00	1.50									
	N. H. 2	60.71	2.00									
	N. K. 2	51.28	1.80									
	Average	56.71	1.72		68.71	2.22		59.93	1.58		61.85	1.74
	Increase on Manured Plats				12.00	.50		3.22	.14		5.14	.02

THIRD SERIES.	N. B. 3	55.71	1.54	Z. A. 3	70.14	1.96	X. C. 3	66.28	1.64	Y. E. 3	59.14	1.80
	N. D. 3	57.43	1.66	Z. I. 3	65.00	2.24	X. G. 3	61.00	1.64			
	N. F. 3	56.43	1.64									
	N. H. 3	56.28	1.66									
	N. K. 3	54.14	1.40									
	Average	56.00	1.58		67.57	2.10		63.64	1.64		59.14	1.80
	Increase on manured plats				11.57	.52		7.64	.06		3.14	.22
FOURTH SERIES.	N. B. 4	59.00	2.02	Z. A. 4	67.71	2.02	X. C. 4	59.00	1.76	Y. E. 4	60.57	1.76
	N. D. 4	54.14	1.80	Z. I. 4	69.28	2.76	X. G. 4	59.71	2.30			
	N. F. 4	54.43	2.04									
	N. H. 4	61.00	2.40									
	N. K. 4	52.43	1.84									
	Average	56.20	2.02		68.50	2.39		59.36	2.03		60.57	1.76
	Increase on manured plats				12.30	37		3.16	.01		4.37	.28
	Average of all the plats	57.76	1.78		63.95	2.30		62.00	1.81		61.53	1.74
	Av. gain over unmanured plats				11.22	.52		4.24	.03		3.77	.40

It will be seen that the plats manured on the surface after plowing, gave the best results in each series of the experiment, and also in the average results of the entire experiment. A comparison of the plats in which the manure was plowed under, shows that the manure applied in December gave the best results in the first and the third series, while the manure applied in April gave the best results in the second and fourth series. The average of the four series gives a slight advantage to the December manuring.

It will not be safe to draw any general conclusions from the results above given, as the peculiarities of the season undoubtedly had a great influence in determining them. A wet spring, followed by a very severe drought during the summer, presented climatic conditions that were not favorable to comparative experiments in the application of manures. Under the most favorable circumstances, however, a comparison of results for a single season could not furnish the desired information as to the relative value of manure applied in different ways. The effect upon the crops which follow in rotation, must of course be taken into account, before the question can be fully answered.

The above report is intended simply to show the progress already made, as it is purposed to continue these experiments through the entire rotation of five years.

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EXPERIMENTS IN THE APPLICATION OF SPECIAL MANURES TO ROOT CROPS.

In field No. 3, eight plats were staked out in the Yellow Globe Wurzels, and forty plats in the Swede Turnips, for experiments in the application of fertilizers. The plats were two rods square, and each one was designated by a letter and number, as shown in the following diagram.

The soil was a sandy loam, containing rather more clay toward the east side, where the beets were sown. From the G plats west, the soil was quite sandy, and the experiment with the fertilizers applied to the turnips, was repeated on plats marked H, I, K, L, M. This part of the experiment was abandoned, as the seed did not come up uniformly, and it is, for that reason, omitted from the diagram.

The soil on the different series of plats was not as uniform as could have been wished, but the repetition of the plats without fertilizers by the side of those to which the fertilizers were applied, together with a duplication of the experiment on the plats from H to M, was thought sufficient to guard against any false estimate of results arising from the variation above mentioned.

This field had been in grass for several years, until 1867, when it was planted to corn. In the spring of 1868 the field was plowed, and a top-dressing of fine, unfermented manure applied to the surface and worked in uniformly with the cultivator. To guard against any variation in the results from a difference in the quality of the manure, the series of plats, as shown by the diagram, were arranged north and south, while the manure was applied in narrow strips running east and west, so that the series of plats indicated by each letter received dressing of the same quality of barn-yard manure.

PLAN OF EXPERIMENT,

With yield of roots, in pounds, on each plat.

EAST.

Two Rods.

NORTH.	BEETS. *Two Rods.*	A, 1. 452 lbs.	A, 2. 540 lbs.	A, 3. 501 lbs.	A, 4. 876 lbs.	SOUTH.
		B, 1. 610 lbs.	B, 2. 580 lbs.	B, 3. 578 lbs.	B, 4. 938 lbs.	
	TURNIPS.	C, 1. 992 lbs.	C, 2. 1,022 lbs.	C, 3. 1,094 lbs.	C, 4. 1,072 lbs.	
		D, 1. 910 lbs.	D, 2. 906 lbs.	D, 3. 896 lbs.	D, 4. 984 lbs.	
		E, 1. 860 lbs.	E, 2, 776 lbs.	E, 3. 824 lbs.	E, 4. 854 lbs.	
		F, 1. 762 lbs.	F, 2. 760 lbs.	F, 3. 782 lbs.	F, 4. 843 lbs.	
		G, 1. 771 lbs.	G, 2. 852 lbs.	G, 3. 637 lbs.	G, 4. 839 lbs.	

WEST.

The beets (Yellow Globe Wurzels) were sown in drills thirty inches apart, on the 15th day of June. On the 7th day of July a top-dressing of salt, at the rate of 300 lbs. per acre, was sowed along the drills in the plats marked A. The plats marked B had no special fertilizer applied. Any vacancies that occurred in the drills were filled by transplanting from the same plat.

During the season the plants on the plats to which the salt had been applied had larger tops, of a darker green, than the plats without the salt. The results at harvesting, however, showed that the salt was of no benefit.

The turnips on the series of plats marked C, D, E, F and G, were sowed on the second of July, in drills running north and south, thirty inches apart. The variety sown was Skirving's Improved Swede—seed at the rate of 2 lbs. per acre. The seed came up uniformly, and a good stand was obtained over all the plats. On the seventh of July special fertilizers were sowed along the drills, at the rate of 300 lbs. per acre, as follows:

Plats marked C, Berry's Superphosphate of Lime.
" E, Baugh's " "
" G, Baugh's Chicago Blood-manure. No dressing of special manures was applied to plats marked D and F.

The plats from H to M were sowed on the third of July.

The seed was from the same package, the same drill was used, and the sowing was done by the same person who put in the crop the preceding day, on plats from C to G. A shower of rain fell during the night of July 2d, and it was thought at the time that the soil was in better condition for seeding the last day than it was the day before. But a small part of the seed came up, however, and the plants were not even enough to make the experiment of any value, so that this part of the trial was abandoned.

After the second leaf had made its appearance the plants were thinned in the drill to the distance of one foot. In the cultivation of the crop the same amount of labor was performed on each plat, each operation extending over the entire series the same day. The crop was harvested October 28th, the bulbs from each plat being separately weighed. The crop was very much injured by the severe drouth of the summer.

As many of the leaves were withered from the effects of the drouth, and considerable variations were presented on different parts of the same plat, they were not weighed at the close of the experiment. The results estimated by the acre for each plat are given in tables Nos. 1 and 2.

TABLE No. 1.

TURNIPS.

Letter and Number of Plat.	Yield Per Acre.		Remarks.
	Pounds.	Bushels of 60 lbs.	
C. 1	39,680	666.33	Section C, 1, 2, 3, 4, an application of Berry's Superphosphate, at the rate of 300 lbs. per acre.
C. 2	40,880	681.33	
C. 3	43,760	729.33	
C. 4	42,880	714.66	
Average	41,800	696.66	

TABLE No. 1—Continued.

TURNIPS.

Letter and Number of Plat.	Yield Per Acre.		Remarks.
	Pounds.	Bushels	
D. 1	36,400	606.66	No special Manure.
D. 2	36,240	604.00	
D. 3	35,840	597.33	
D. 4	39,360	656.00	
Average	36,960	616.00	
E. 1	34,400	573.33	Section E, 1, 2, 3, 4, an application of Baugh's Superphosphate, at the rate of 300 lbs. per acre.
E. 2	31,040	517.33	
E. 3	32,960	549.38	
E. 4	34,160	569.33	
Average	33,140	552.33	
F. 1	30,480	508.00	No special Manure.
F. 2	30,400	506.66	
F. 3	31,280	521.33	
F. 4	33,720	562.00	
Average	31,470	524.50	
G. 1	30,840	514.00	Section G, 1, 2, 3, 4, an application of Baugh's Blood Manure, at the rate of 300 lbs. per acre.
G. 2	34,080	568.00	
G. 3	25,480	424.66	
G. 4	33,569	559.33	
Average	30,990	516.50	

TABLE No. 2.

BEETS.

Letter and Number of Plat.	Yield Per Acre.		Remarks.
	Pounds.	Bushels of 60 lbs.	
A. 1	18,080	301.33	Section A, 1, 2, 3, 4, an application of Salt, at the rate of 300 lbs. per acre.
A. 2	21,600	360.00	
A. 3	20,400	340.00	
A. 4	35,040	584.00	
Average	23,780	396.33	
B. 1	24,400	406.66	No special Manure.
B. 2	23,200	386.66	
B. 3	23,120	385.33	
B. 4	37,520	625.33	
Average	27,060	450.99	

The results for each series of the turnip experiments, in bushels per acre, are given in table No. 3, together with the average of all the series, compared with the average of the plats without special manures. The losses are indicated by the minus sign.

TABLE No. 3.

	No Special Manure.			Berry's Superphosphate.		Baugh's Superphosphate.		Baugh's Chicago Blood Manure.	
	Plat.	Yield in bushels, per acre.	Average.	Plat.	Yield in bushels, per acre.	Plat.	Yield in bushels, per acre.	Plat.	Yield in bushels, per acre.
First Series.	D. 1................	606.66	557.33	C. 1.	661.33	E. 1.	573.33	G. 1.	514.00
	F. 1................	508.00	......	......	......	......	......	......	......
	Gain over average of unmanured Plats..................				104.00	......	16.00	......	-43.00
Second Series.	D. 2................	604.00	555.33	C. 2.	681.33	E. 2.	517.33	G. 2.	568.00
	F. 2................	506.66	......	......	......	......	......	......	......
	Gain over average of unmanured Plats..................				126.00	......	-38.00	......	12.67
Third Series.	D. 3................	597.33	559.33	C. 3.	729.33	F. 3.	549.33	G. 3	424.66
	F. 3................	521.33	......	......	......	......	......	......	......
	Gain over average of unmanured Plats..................				170.00	......	-10 00	......	-134.67

TABLE No. 3.—Continued.

	No Special Manures.			Berry's Superphosphate.		Baugh's Superphosphate.		Baugh's Chicago Blood Manure.	
	Plat.	Yield in Bushels per acre.	Average.	Plat.	Yield in Bushels per acre.	Plat.	Yield in Bushels per acre.	Plat.	Yield in Bushels per acre.
Fourth Series.	D. 4	656.00	609.00	C. 4	714.66	E. 4	569.33	G. 4	559.33
	F. 4	562.00	....	....	....	....	....	....	....
	Gain over average of unmanured plats				105.66	....	-39.67	....	-49.67
Averages.	Average of all the Plats.								
	D. 1, 2, 3 and 4 F. 1, 2, 3 and 4	570.25	....	C. 1, 2, 3 and 4.	696.66	E. 1, 2, 3 and 4.	552.33	G. 1, 2, 3 and 4.	516.50
	Gain				126.41	....	-17.92	....	-53 75

An examination of the tables and the plan of the experiment, will show a uniform increase in the yield of the plats from the series marked G, to the series marked C. This is undoubtedly owing to variations in the quality of the soil in the different series of plats. The regular increase in the yield from G to C, seems to show that the special fertilizers produced no effect whatever on the growth of the crops. The extreme drought that prevailed during the early growth of the plants, is perhaps sufficient to explain this unexpected result. Had the fertilizers been distributed in the drill at the time of sowing, as they should have been, a fairer estimate of their value might have been obtained. A mistake in shipping the fertilizers caused a delay that prevented their arrival in season for their application at the proper time.

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EXPERIMENTS WITH INDIAN CORN, IN HILLS AND IN DRILLS.

Twenty-four plats, each two rods square, were staked out on the east side of field No. 2, as shown in the following plan, for the purpose of ascertaining the relative advantages of planting corn in hills and in drills. The plats were arranged in two series, designated by the letters M and L, with a strip of beans planted between, to facilitate the equal distribution of labor in the cultivation. The ground was plowed May 5th, and the manure, applied evenly over the surface, was worked in by the cultivator and harrow. Yellow Dent corn was planted on all the plats May 21st, in rows four feet apart. The plats were all cultivated and hoed on the 15th of June, and again on the 7th of July, the plants being thinned so as to leave the same number of stalks on each piece.

The M plats, planted in drills, were cultivated twice in each row at the time of hoeing, while the L plats, planted in hills, were cultivated once in a row each way, at the time of hoeing. In the cultivation of the crop it was purposed to expend, as far as possible, the same amount of labor on each series of the plats.

On the 17th of September the stalks were cut up at the bottom, and secured in "stooks" in good order. The corn was husked and weighed in the plats numbered 7, 8, 9, 10, 11 and 12, in each series, on the 6th of October, and in plats numbered 1, 2, 3, 4, 5 and 6, in each series, on the 9th of October, the stalks being bound and carefully set up again in "stooks." On the 12th of October the stalks were hauled to the barn in good condition, a separate weighing being made for each plat. The weight of corn in the ear, and for the stalks for each plat, is given in the following plan of the experiment:

Plan of Experiments with Corn in Hills and in Drills, showing the yield of Corn and Stalks for each plat, in pounds and decimals of a pound.

NORTH.

WEST.

Corn in Drills.	Beans.	Corn in Hills.
M, 1. Corn, 124.75 Stalks, 138		L, 1. Corn, 120.25 Stalks, 150
M, 2. Corn, 117.75 Stalks, 142		L, 2. Corn, 119.75 Stalks, 144
M, 3. Corn, 120.25 Stalks, 156		L, 3. Corn, 120.25 Stalks, 144
M, 4. Corn, 138.75 Stalks, 154		L, 4. Corn, 125.25 Stalks, 166
M, 5. Corn, 122.75 Stalks, 140		L, 5. Corn, 115.75 Stalks, 140
M, 6. Corn, 129.25 Stalks, 154		L, 6. Corn, 116.25 Stalks, 130

EAST.

SOUTH.

Plan of Experiments with Corn in Hills and in Drills—Continued.

NORTH.

WEST.

Corn in Drills.	Beans.	Corn in Hills.
M, 7. Corn, 145.75 Stalks, 180		L, 7. Corn, 115.75 Stalks, 150
M, 8. Corn, 137.75 Stalks, 152		L, 8, Corn, 108.25 Stalks, 120
M, 9. Corn, 149.75 Stalks, 158		L, 9. Corn, 104.75 Stalks, 100
M, 10. Corn, 133.25 Stalks, 160		L 10. Corn, 119.25 Stalks, 120
M, 11. Corn, 129.75 Stalks, 148		L, 11. Corn, 105.75 Stalks, 100
M, 12. Corn, 107.75 Stalks, 104		L, 12. Corn, 103.75 Stalks, 130

EAST.

SOUTH.

The north plats in each series were nearly level, the soil containing considerably more clay than the plats at the south end of the series. In comparing plats of the same number in each series, there was apparently no difference in the character of the soil. The quality of the corn was rather better on the plats planted in hills. In the following tables the results are given for each plat, as estimated by the acre. In the column of shelled corn, seventy pounds of ears has been estimated as equal to a bushel (of 56 lbs.) of shelled corn:

TABLE NO. 1.

DRILLS.

Letter and Number of Plat.	YIELD PER ACRE.			
	Corn.		Stalks.	
	Pounds.	Bushels shelled, at 70 lbs., ears.	Pounds.	Tons.
M. 1	4990	71.28	5520	2.76
M. 2	4710	67.28	5680	2.84
M. 3	4810	68.71	6240	3.12
M. 4	5550	79.28	6160	3.08
M. 5	4910	70.14	5600	2.80
M. 6	5170	73.85	6160	3.08
M. 7	5830	83.28	7200	3.60
M. 8	5510	78.71	6080	3.04
M. 9	5990	85.57	6320	3.16
M. 10	5330	76.14	6400	3.20
M. 11	5190	74.14	5920	2.96
M. 12	4310	61.57	4160	2.08
Average	5192	74.16	5953	2.98

TABLE NO. 2.

HILLS.

Letter and Number of Plat.	Yield Per Acre.			
	Corn.		Stalks.	
	Pounds.	Bushels shelled, at 70 lbs., ears.	Pounds.	Tons.
L. 1	4810	68.71	6000	3.00
L. 2	4790	68.43	5760	2.88
L. 3	4810	68.71	5760	2.88
L. 4	5010	71.57	6640	3.32
L. 5	4630	66.14	5600	2.80
L. 6	4650	66.43	5200	2.60
L. 7	4630	66.14	6000	3.00
L. 8	4330	61.85	4800	2.40
L. 9	4190	59.85	4000	2.00
L. 10	4770	68.14	4800	2.40
L. 11	4230	60.43	4000	2.00
L. 12	4150	59.28	5200	2.60
Average	4583	65.47	5313	2.65

EXPERIMENTS WITH CORN.

This series of experiments was made for the purpose of determining the relative fertility of unmanured experimental plats, with reference to obtaining a reliable standard of comparison in field experiments.

In my report on experiments for the year 1866, the variations observed in the productiveness of unmanured experimental plats, of apparently the same quality and texture of soil, were referred to as a difficulty in the way of obtaining a reliable standard of comparison by which the results of field experiments may be measured. (See Report of Secretary of Board of Agriculture for 1866, p. 59.)

In accordance with the suggestions then made, the following experiment has been planned for the purpose of avoiding this source of error in the determination of results.

Twenty-four plats of uniform size (two rods by four rods) were staked off on the lawn north of the Boarding Hall, each of which is designated by a number and letter, so that the experiment can be readily divided into several parallel series. These plats occupy part of the ground under experiment in the surface application of manures in 1864–6. (See Report of Secretary of Board of Agriculture for 1866, p. 55.) The outline of the original plats is traced on the office record of the present experiment, and a careful examination of the results shows that the fertilizers applied in 1864 have produced no perceptible effect the present season. The soil is a light sandy loam, of uniform character, so far as can be determined by its physical properties and appearance, excepting at the southeast corner of the piece.

Plats A. 4, B. 4, and parts of plats A. 3, B. 3, C. 3, and C. 4, occupying the lowest portion of the ground, have a soil considerably darker than that of the other plats. The surface of the piece is nearly level, there being but a slight descent to the southeast towards the above mentioned plats.

With the exception already noticed, it would be difficult to find a piece of ground presenting a greater uniformity in the appearance of its subdivisions. At the north side of the piece several smaller plats have been added, to fill out the triangular piece along the plank road. The following plan will show the arrangement of the plats, together with the produce of corn and of stalks on each plat. The weights are given in pounds and decimals of a pound, the corn being weighed in the ear.

PLAN OF EXPERIMENTAL GROUND NORTH OF BOARDING HALL.

NORTH.

TWO RODS.

TWO RODS.

WEST.

EAST.

Corn, lbs 166.62 F. Stalks, lbs. 140	Corn, lbs. 68.37 F. Stalks, lbs. 66	Corn, lbs. 52.87 D. Stalks, lbs. 52	Corn, lbs. 47.87 C. Stalks, lbs. 50		
Corn, 147.12 F. 1. Stalks, 142	Corn, 153.75 E. 1. Stalks, 127	Corn, 156.62 D. 1. Stalks, 144	Corn, 130.75 C. 1. Stalks, 125	Corn, 114.75 B. 1. Stalks, 119	Corn, 117.25 A. 1. Stalks, 134
Corn, 123.25 F. 2. Stalks, 143	Corn, 166.25 E. 2. Stalks, 167	Corn, 195.62 D. 2. Stalks, 186	Corn, 192.62 C. 2. Stalks, 189	Corn, 197.50 B. 2. Stalks, 198	Corn, 204.50 A. 2. Stalks, 193
Corn, 160.62 F. 3. Stalks, 183	Corn, 168.62 E. 3. Stalks, 178	Corn, 192.25 D. 3. Stalks, 189	Corn, 223.50 C. 3. Stalks, 200	Corn, 202.87 B. 3. Stalks, 189	Corn, 201.00 A. 3. Stalks, 176
Corn, 153.62 F. 4. Stalks, 165	Corn, 173.12 E 4. Stalks, 190.50	Corn, 208.00 D. 4. Stalks, 207	Corn, 215.50 C. 4. Stalks, 198	Corn, 217.50 B. 4. Stalks, 193	Corn, 199.50 A. 4. Stalks, 198

SOUTH.

No manure of any kind has been applied to these plats since the year 1864, as described in the report on the surface application of manures. The plats have all been treated in the same manner, the same amount of labor having been expended on each. The sod was plowed under with a flat furrow about five inches in depth, on the 8th day of May. On the 19th the surface was fitted for planting, by the use of the cultivator and harrow. Yellow Dent corn was planted in hills four feet apart each way, on the 20th. June 16th the corn was cultivated and hoed, the plants being thinned to a uniform number in each hill. On the 14th of July the corn was again cultivated, and on the 16th it was hoed. The corn made a slow growth during the first part of the season, and for a time it was thought that the crop would prove an entire failure. On the 22d of September the corn was cut up at the bottom, and put in "stooks." The plats were all husked on the 12th of October, the corn being separately weighed on each plat. The corn was of inferior quality, the severe drought interfering with the maturity of the crop. On the 15th of October the stalks were hauled, the produce of each plat being weighed by itself. In the following table (No. 1) the yield for each plat is given per acre, together with the average of the plats having the same letter. In the second column of the table, the estimated amount of shelled corn is given, reckoning seventy pounds of ears to a bushel (of fifty-six pounds) of shelled corn:

TABLE NO. 1.—*Experimental Ground North of Boarding Hall.*

LETTER AND NUMBER OF PLAT.	YIELD PER ACRE.			
	CORN.		STALKS.	
	Pounds.	Bushels shelled, at 70 lb. ears.	Pounds.	Tons.
A, 1	2345	33.50	2680	1.34
A, 2	4090	58.43	3860	1 93
A, 3	4020	57.43	3520	1.76
A, 4	3990	57.00	3960	1.98
Average	3584	51.24	3505	1.75
B, 1	2295	32.78	2380	1.19
B, 2	3950	56.43	3960	1.98
B, 3	4057	57.96	3780	1.89
B, 4	4350	62.14	3860	1.93
Average	3663	52.33	3495	1.74
C	1915	27.35	2000	1 00
C, 1	2615	37.35	2500	1.25
C, 2	3852	55.03	3780	1.89
C, 3	4470	63.85	4000	2 00
C, 4	4310	61.57	3960	1.98
Average	3432	49.03	3248	1.62
D	2115	30.21	2080	1.04
D, 1	3132	44 75	2880	1 44
D, 2	3912	55.89	3720	1.86
D, 3	3845	54.94	3780	1 89
D, 4	4160	59.43	4140	2.07
Average	3433	49 04	3320	1.66
E	2735	39 07	2640	1.32
E, 1	3075	43 93	2540	1.27
E, 2	3325	47.50	3340	1.67
E, 3	3372	48.18	3560	1.78
E, 4	3462	49 46	3810	1.90
Average	3194	45.65	3178	1.59
F	3332	47.60	2800	1.40
F, 1	2942	42.03	2840	1.42
F, 2	2465	35.21	2860	1.43
F, 3	3212	45.89	3660	1 83
F, 4	3072	43.89	3300	1.65
Average	3004	42.92	3092	1.54

The least yield, according to the table, is 27.35 bushels of shelled corn and one ton of stalks per acre, on plat C; while the greatest yield is 63.85 bushels of shelled corn, on plat C 3, and 2.07 tons of stalks on plat D 4. The average of all the plats is 48.17 bushels of shelled corn, and 1.65 tons of stalks per acre. From the wide range of variation of these plats, all treated in the same way, it will be seen that the results of a single field experiment in the application of manures, cannot be relied on to establish any rule of practice.

Improvements in agriculture can only be made by means of a systematic series of experiments, so conducted as to guard against all sources of fallacy, and then carefully repeated under a variety of circumstances. Experiments like these cannot well be made by a private individual, unless he is willing to expend a fortune for the purpose, in addition to his personal supervision for a series of years. The results obtained this season in the experiment under consideration, furnish simply a starting point for the investigations that are to follow. The yield of each plat, as above recorded, will serve as a standard by which future results may be measured. One-half of the plats will receive an application of manures next season, while the other half will be cropped without the addition of fertilizers, and the results will then be recorded for a number of years.

M. MILES,

Professor of Practical Agriculture in Michigan Agricultural College

EXPERIMENTS IN SHEEP FEEDING.

By M. MILES,

PROFESSOR OF PRACTICAL AGRICULTURE IN MICHIGAN AGRICULTURAL COLLEGE.

Twelve half-blood Cotswold sheep, selected for feeding, were put in the pens, at the south end of the sheep barn, the second day of November, 1867. The pens were numbered from one to six, two sheep being placed in each. Sheep No. 1, in pen No. 1, and sheep No. 1, in pen No. 2, were ewes; the rest were wethers. Pens No. 5 and 6 were occupied by the same animals as in the experiments of the year 1867. (See Report of the Secretary of the Board of Agriculture for 1867, pages 51 and 52.)

The sheep in all the pens were got by a pure-bred Cotswold ram, out of common ewes, (grade Merinos.) The sheep in pens No. 1, 2, 3 and 4 were from five and one-half to six and one-half months old; those in pens No. 5 and 6 were between eighteen and nineteen months old. Each sheep was weighed at the beginning of the experiment, and at the close of each week. These weekly weighings were made in the morning, before feeding or watering, so as to avoid any variations that might occur from a difference in the amount of undigested food in the stomach.

The feed for each pen was carefully weighed each day at the time of feeding, and particular care was taken to prevent any waste after feeding. "Chaffed" hay was fed in each pen, so that each sheep had all it would eat; if any remained in the boxes, it was taken out, carefully weighed, and deducted from the amount fed. In addition to the chaffed hay, each pen was supplied with a fixed ration of other feed, as follows:

Pen No. 1—Shelled corn and roots, cut in narrow slices.
Pen No. 2— " " "
Pen No. 3—Shelled corn.
Pen No. 4—Roots, cut in narrow slices.
Pen No. 5—Shelled corn.
Pen No. 6—Roots, cut in narrow slices.

The hay feed was a mixture of clover and timothy; the corn was of the variety known as the yellow dent; and the roots were Skirving's Improved Swede turnip.

The weights of the sheep at the beginning of the experiment and at the close of each week, are shown in table No. 1. The weights are given in pounds and decimals of a pound.

TABLE NO. 1.—*Weight of Sheep at the beginning of the Experiment, and at the close of each week.*

Date of weighing.		Pen No. 1.	Pen No. 2.	Pen No. 3	Pen No. 4.	Pen No. 5	Pen No. 6.
Nov. 2, 1867.	Beginning of Experiment.	78.5	83.5	83.5	87.0	114.0	119.0
		97 0	86.0	89.5	82 5	115.0	125.0
		175.5	169.5	173.0	169.5	229.0	244.0
November 9th ..	1st week	77.0	81.5	77.5	89.0	112.5	128.5
		101 5	89.5	90 5	78.5	118.5	131.5
		178.5	171.0	168.0	167.5	231.0	260.0
November 16th	2d week	72.0	82.0	78 0	85.5	111.5	123.0
		96.5	86.0	89.0	77.5	122.0	125.5
		168.5	168.0	167.0	163 0	233.5	248.5
November 23d ..	3d week	73.5	81.5	79.5	87.0	118.0	121.0
		98.5	86.5	91.5	73.5	120.0	125.0
		172.0	168.0	171.0	160.5	238.0	246.0
November 30th	4th week..........	72.5	85 0	94.5	91.0	117.0	120.0
		100.5	88.0	82.0	75.0	121.5	128 0
		173.0	173.0	176.5	166.0	238.5	248.0
December 7th ..	5th week..........	73.5	81.0	81.0	87.5	115.0	117.0
		97.5	87.5	93.0	71.5	122.0	126.5
		171.0	168.5	174.0	159.0	237.0	243.5
December 14th .	6th week	76.5	87.5	96.0	91.0	118.0	121.5
		96 0	86.0	84.5	74 5	125 0	132.0
		172.5	173.5	180.5	165.5	243.0	243.5
December 21st..	7th week	79.0	82,0	94.5	89.0	116.9	121.0
		97.0	85 5	85.0	75.5	128.5	131.0
		176.0	167.5	179.5	164.5	244.5	252.0
December 28th .	8th week..........	79 0	85.0	98.0	86.5	118.0	118.5
		96.5	88.0	82.5	70.0	128 5	131.0
		175.5	173.0	180.5	156.5	246.5	249.5

TABLE No. 1.—Continued.

Date of weighing.		Pen No. 1.	Pen No. 2.	Pen No. 3.	Pen No. 4.	Pen No. 5.	Pen No. 6.
January 4th, '68.	9th week........	83.0	83.5	100.5	90 0	122.0	121 5
		98.0	89.5	87.0	73.5	127.5	134.0
		181.0	173.0	187.5	163.5	249 5	255.5
January 11th...	10th week.......	83.0	82.5	101.5	89.5	124.5	121.5
		85.5	90.0	88.5	72.0	128.5	131.5
		168.5	172.5	190.0	161.5	253.0	253.0
January 18th...	11th week.......	83.5	87.5	102.5	91.0	128.0	122.5
		83.5	92.0	89.5	71.0	133.5	134.5
		167.0	179.5	192.0	162.0	261.5	257.0
January 25th...	12th week.......	83.0	86.5	102 0	92.0	126 5	123.0
		87.0	94.0	89.5	72.5	134.0	134.5
		170.0	180.5	191.5	164.5	260.5	257.5
February 1st ...	13th week.......	84.5	89.0	106.5	94.5	132 5	127.5
		88.5	98.0	93.5	75.5	139.5	137.5
		168.0	187.0	200.0	170.0	272.0	265.0
February 8th...	14th week.......	97.5	94.0	106.5	96.0	131.0	132.5
		76.0	102.0	93.0	77.0	139.5	199.0
		173.5	196.0	199.5	173.0	270.5	271.5
February 15th..	15th week.......	90.0	91 5	110.5	101.0	129.5	126.5
		79.5	103.0	95.0	74 5	140.0	139.0
		169.5	194.5	205.5	175 5	269.5	265.5
February 22d...	16th week.......	89.5	94.0	114.0	101.5	134.0	127.5
		76.5	105.5	98.5	79.5	141.5	138.0
		166.0	199.5	212.5	181.0	275.5	265.5
February 29th..	17th week.......	93.0	98.0	118.0	105.5	138.0	136.0
		77.5	108.0	103.5	85.0	149.0	142.0
		170.5	206.0	221.5	190.5	287.0	278.0

TABLE NO. 1.—Continued.

Date of weighing.		Pen No. 1.	Pen No. 2.	Pen No. 3.	Pen No. 4.	Pen No. 5.	Pen No. 6.
March 7th......	18th week.......	95.0	100.0	117.5	106.5	135.5	133.0
		79.0	110.5	102.5	83.0	146.0	135.5
		174.0	210.5	220.0	189.5	281.5	268.5
March 14th.....	19th week.......	94.0	101.0	119.5	106.0	133.0	135.0
		88.0	111.0	104.5	84.0	147.5	139.0
		182.0	212.0	224.0	190.0	280.5	274.0
March 21st	20th week.......	96.5	98.5	123.0	110.0	134.0	132.5
		82.0	112.0	105.5	84.0	245.0	143.0
		178.5	210.5	228.5	194.0	279.0	276.5
March 28th.....	21st week	100.5	105.5	129.5	114.5	143.5	137.5
		81.0	116.5	110.5	91.5	154.0	144.0
		181.5	222.0	240.0	206.0	297.5	281.5
April 4th.......	22d week........	102.5	106.0	131.5	113.0	144.0	137.0
		83.0	117.5	115.0	89.5	153.0	143.5
		185.5	223.5	246.5	202.5	297.0	280.5
April 11th......	23d week........	107.5	108.0	135.5	120.5	147.0	144.0
		86.5	119.5	120.5	91.0	157.0	152.0
		194.0	227.5	256.0	211.5	304.0	296.0
April 18th......	24th week.......	106.5	108.0	134.0	118.0	147.0	150.0
		82.5	116.0	117.5	88.0	159.0	153.5
		189.0	224.0	251.5	206.0	306.0	303.5
April 24th......	25th week.......	106.5	105.0	134.5	118.5	144.0	142.0
		78.0	115.5	114.5	85.5	158.5	148.5
		184.5	220.4	249.0	204.0	302.5	290.5
May 1st........	26th week.......	108.0	111.5	137.5	123.0	146.0	141.5
		80.5	120.0	124.0	84.5	160.0	150.0
		188.5	231.5	261.5	207.5	306.0	291.5

TABLE No. 1—Continued.

Date of Weighing.		Pen No. 1	Pen No. 2	Pen No. 3.	Pen No. 4.	Pen No. 5.	Pen No. 6.
May 8th........	27th week.......	108.5 78·0	111.0 120.5	137.0 122.0	122.0 85.5	138.0 164.5	141.0 151.5
		186.5	231.5	259.0	207.5	302.5	292.5
May 15th.......	28th week.......	110.0 78.5	110.0 122.0	138.5 123.0	124.5 85.0	115.5 163.0	142.0 153.5
		188 5	232.0	261.5	209.5	278.5	295.5
May 22d........	29th week.......	112.0 79.5	110.5 122 0	138 0 123.5	124.0 80.5	110.5 162.0	143.0 153 0
		191.5	232.5	261.5	204.5	272.5	296.0
May 29th.......	30th week.......	113.0 77.0	114.0 123.0	139.5 132.0	123.0 76.0	.... 162 0	142.0 152.0
		190.0	237.0	271.5	199.0	162.0	294.0
June 5th.......	31st week.......	114.0	111 0 123.0	136.0 125.0	122.0 70.5	.... 160.0	146.0 154 5
		114.0	234.0	261.0	192.5	160.0	300.5

Considerable variation in the rate of increase will be observed in all the pens, while losses in weight, even in the animals that made the greatest aggregate gain, are frequent. The sheep in pen No. 1 did not do well from the very commencement of the experiment. No. 2 lost 20 lbs. in weight, and was finally removed from the pen before the close of the experiment. Sheep No. 2, in pen No. 4, lost 12 lbs., although it did not at any time appear to be sick. Sheep No. 1, in pen No. 5, was not well for several weeks before the close of the experiment, and was finally removed from the pen at the close of the 29th week.

It is exceedingly difficult to conduct any kind of experiment in practical agriculture in a satisfactory manner, from the great variety of circumstances that tend to modify results; but when the subtile principle of life, as exhibited in animated beings, is involved in the line of investigation, the difficulties in the way of exact determinations seem almost insuperable.

At the beginning of feeding experiments, before the animals become accustomed to the new conditions in which they are placed, losses almost invariably occur. It was observed in the present experiment that any unusual disturbance of the other animals in the same building had a marked effect on the progress of those under experiment. It will be observed that losses occurred in all the pens after the 23d week. The only cause that could be assigned for these losses was the change in the management of the other sheep in the same building.

About the commencement of the 24th week, the sheep not under experiment were turned out during the day, and returned to the barn at night. The experimental sheep immediately became restless during the day, and a general loss in weight was observed, notwithstanding an increase in the fixed ration of food, so that it was thought best to terminate the experiment sooner than had before been intended. From our experience thus far in experimental feeding, it seems desirable that a separate building be provided for this purpose, and that but a single animal be placed in each pen.

In table No. 2 is shown the amount of feed consumed in each pen for each week of the experiment.

TABLE NO. 2.—*Amount of Feed consumed in each Pen for each week of the Experiment.*

WEEK.	PEN NO. 1.			PEN NO. 2.			PEN NO. 3.		PEN NO. 4.		PEN NO. 5.		PEN NO. 6.		
	Roots.	Corn.	Hay.	Roots.	Corn.	Hay.	Corn.	Hay.	Roots.	Hay.	Corn.	Hay.	Roots.	Hay.	
1st	8.70	3.00	22.56	15.00	3.00	22.00	6.25	16.50	28.50	21.60	9.75	29.00	48.75	34.00	1
2d	13.75	2.75	19.00	13.75	2.75	17.00	5.50	18.00	27.50	21.25	8.25	24.00	41.25	30.50	2
3d	17.50	3.75	20.10	17.50	3.50	20.65	7.00	21.60	35.00	22.72	10.50	28.68	52.50	28.04	3
4th	17.50	3.50	20.50	17.50	3.50	17.56	7.00	22.97	35.00	24.10	10.50	27.00	52.50	28.50	4
5th	17.50	3.50	16.35	17.50	3.50	18.00	7.00	20.12	35.00	20.25	10.50	24.75	52.50	25.25	5
6th	29.50	4.50	18.69	29.50	4.50	18.97	10.00	23.00	56.00	18.69	13.50	28.78	82.50	26.85	6
7th	38.50	5.25	14.69	38.50	5.25	13.60	12.25	21.88	71.75	15.69	15.75	24.44	105.00	17.82	7
8th	38.50	5.25	16.41	38.50	5.25	16.73	12.25	20.75	75.87	10.44	15.75	25.94	105.00	23.82	8
9th	38.50	5.25	18.57	38.50	5.25	20.54	12.25	24.36	71.75	16.88	15.75	28.79	105.00	27.38	9
10th	38.50	5.25	11.19	38.50	5.25	18.79	12.25	25.50	71.75	18.04	15.75	29.10	105.00	27.19	10
11th	38.50	5.25	11.82	38.50	5.25	19.50	12.25	23.04	71.75	15.32	15.75	29.19	105.00	26.75	11
12th	38.50	5.25	14.04	38.50	5.25	25.04	12.25	27.00	71.75	20.13	15.75	33.25	105.00	30.79	12
13th	38.50	5.25	11.32	38.00	5.25	26.75	12.25	29.50	70.13	21.88	15.75	37.50	105.00	31.75	13
14th	38.50	5.25	7.69	38.50	5.25	28.50	12.25	28.94	71.75	21.63	15.75	37.50	105.00	31.50	14
15th	38.50	5.25	12.75	38.50	5.25	29.32	12.25	32.00	77.00	24.94	15.75	40.00	105.00	26.25	15
16th	38.50	5.25	10.50	38.50	5.25	30.25	12.25	34.38	77.00	25.25	15.75	40.75	105.00	23.44	16
17th	38.50	5.25	11.25	38.50	5.25	31.07	12.25	33.25	72.50	26.32	15.75	37.04	105.00	30.66	17
18th	38.50	5.25	15.62	38.50	5.25	33.00	12.25	34.81	72.50	29.18	15.75	33.06	105.00	29.06	18
19th	38.50	5.25	12.93	38.50	5.25	32.68	12.25	36.75	72.12	29.25	15.75	32.00	105.00	29.31	19
20th	38.50	5.25	18.18	38.50	5.25	35.87	12.25	40.87	71.75	31.31	15.75	30.18	104.00	32.75	20
21st	38.50	5.25	19.25	38.50	5.25	37.00	12.25	40.56	71.75	32.87	15.75	36.56	105.00	34.12	21
22d	49.00	7.00	15.12	49.00	7.00	33.41	15.56	37.68	91.00	27.06	17.50	32.81	119.00	25.31	22
23d	49.00	7.00	16.18	49.00	7.00	30.43	15.75	37.37	91.00	26.37	17.50	33.56	119.00	33.56	23
24th	49.00	7.00	12.62	49.00	7.00	26.69	15.75	34.18	91.00	25.62	17.50	33.50	119.00	31.94	24
25th	49.00	7.00	8.06	48.75	7.00	22.12	15.75	26.31	91.00	20.56	17.50	27.12	117.93	24.62	25
26th	49.00	7.00	10.18	48.75	7.00	24.12	15.62	28.12	90.68	23.93	17.50	27.56	118.18	21.56	26
27th	62.00	8.62	9.25	62.00	8.62	22.75	17.37	27.68	104.00	20.25	19.12	12.93	130.25	22.37	27
28th	63.00	8.75	9.18	63.00	8.75	20.18	17.50	24.68	105.00	20.12	7.31	10.25	130.87	25.50	28
29th	63.00	8.75	7.81	63.00	8.75	17.31	17.50	22.25	105.00	15.87	10.50	10.31	130.25	25.50	29
30th	63.00	8.75	7.81	63.00	8.75	19.93	17.50	23.12	105.00	11.56	10.50	10.75	131.06	23.75	30
31st	40.00	5.31	8.31	62.25	8.75	19.75	17.75	20.31	105.00	13.25	9.75	6.62	120.50	22.62	31

The average weight of the sheep in each pen, for each week of the experiment, is given in Table No. 3. The average weight for the week is obtained by adding the weight at the beginning of the week to the weight at the close of the week, and dividing the sum by two.

TABLE NO. 3.—*Average Weight of Sheep in each Pen for each Week.*

Week.	Pen No. 1.	Pen No. 2.	Pen No. 3.	Pen No. 4.	Pen No. 5.	Pen No. 6.
1st	177.00	170.25	170.50	168.50	230.00	251.50
2d	173.50	169.50	167.50	165.25	232.25	253.75
3d	170.25	168.00	169.00	162.00	235.75	247.25
4th	172.50	170.50	173.75	163.50	238.25	247.00
5th	172.00	170.75	175.25	162.50	237.75	245.75
6th	171.75	171.00	177.25	162.25	240.00	248.50
7th	174.25	170.50	180.00	165.00	243.75	252.75
8th	175.75	170.25	180.00	160.50	245.50	250.75
9th	178.25	173.00	183.75	160.00	248.00	252.50
10th	174.75	172.75	188.75	162.50	251.25	254.25
11th	167.75	176.00	191.00	161.75	257.25	255.00
12th	168.50	180.00	191.75	163.25	261.00	257.25
13th	169.00	183.75	195.75	167.25	266.25	261.25
14th	170.75	191.50	199.75	171.50	271.25	268.25
15th	171.50	195.25	202.50	174.25	270.00	268.50
16th	167.75	197.00	209.00	178.25	272.50	265.50
17th	168.25	202.75	217.00	185.75	281.25	271.75
18th	172.25	208.25	220.75	190.00	284.25	273.25
19th	178.00	211.25	222.00	189.75	281.00	271.25
20th	180.25	211.25	226.25	192.00	279.25	275.00
21st	180.00	216.25	234.25	200.00	288.25	278.75
22d	183.50	222.75	243.25	204.25	297.25	281.00
23d	189.75	225.50	251.25	207.00	300.50	288.25
24th	191.50	225.75	253.75	208.75	305.00	299.75
25th	186.75	222.25	250.25	205.00	304.25	297.00
26th	186.50	226.00	255.25	205.75	304.25	291.00
27th	187.50	231.50	260.25	207.50	304.25	292.00
28th	187.50	231.75	260.25	208.50	290.50	294.00
29th	190.00	232.25	261.50	207.00	275.50	295.75
30th	190.75	234.75	266.50	201.75	217.25	295.00
31st	152.00	235.50	266.25	195.50	161.00	297.25

In comparing the amount of food consumed in the different pens each week, and the amount of food consumed at different periods in the same pen, it becomes necessary to bring the weights of the sheep to a uniform standard. One hundred pounds of live weight is taken as a convenient standard of comparison in the following table (No. 4), which gives the amount of food consumed each week for each 100 pounds of live weight.

This table is formed from tables Nos. 2 and 3, by a simple proportion. For example, in pen No. 4 the average weight of the sheep the first week, according to table No. 3, is 168.50 pounds. The weight of roots consumed in this pen for the week, according to table No. 2, is 28.50 pounds. The amount of roots consumed by each 100 pounds of live weight may be found as follows:

168.50 : 100 lbs. : : 28.50
100

168.50)2850.00(16.91 lbs. of roots consumed for
16850 each 100 lbs. of live weight.

116500
101100

154000
151650

23500
16850

6650

By reference to table No. 2 it will be seen that an increase in the fixed ration of corn and roots was made the 7th week, and again the 22d week. The object of this increase was to make the fixed ration very nearly the same for each 100 lbs. of live weight throughout the experiment, so that any variation in the amount of feed required during the different periods of feeding would be shown in the hay consumed. The fluctuations in the weight of the sheep from week to week were, however, so frequent as to prevent a complete adjustment of the fixed ration to the weight of the animal.

TABLE NO. 4.—*Amount of food cousumed per week for each one hundred pounds live weight.*

Week.	Pen No. 1.			Pen No. 2.			Pen No. 3.		Pen No. 4.		Pen No. 5.		Pen No. 6.		
	Roots.	Corn.	Hay.	Roots.	Corn.	Hay.	Corn.	Hay.	Roots.	Hay.	Corn.	Hay.	Roots.	Hay.	
1st	4.91	1.69	12.74	8.81	1.76	12.92	3.66	9.68	16.91	12.76	4.24	12.61	19.35	13.52	1
2d	7.92	1.58	10.95	8.11	1.62	10.02	3.28	10.74	16.64	12.86	3.55	10.7[illegible]	16.26	13.20	2
3d	10.27	2.20	11.80	10.41	2.08	12.29	4.04	12.78	21.60	14.02	4.45	12.16	21.23	11.34	3
4th	10.14	2.02	11.88	10.20	2.05	10.29	4.02	13.22	21.40	14.74	4.48	11.33	21.25	11.54	4
5th	10.17	2.03	9.50	10.24	2.04	10.54	3.99	11.48	21.54	12.46	4.41	10.41	21.36	10.28	5
6th	17.17	2.62	10.88	17.25	2.63	11.09	5.64	12.90	34.51	11.52	5.63	11.99	32.79	10.80	6
7th	22.09	3.00	8.43	22.58	3.08	7.97	6.80	12.11	43.49	9.51	6.46	10.03	41.54	7.05	7
8th	21.90	2.98	9.33	22.61	3.08	9.82	6.80	11.53	47.27	6.50	6.41	10.56	41.87	9.49	8
9th	21.59	2.94	10.04	22.25	3.03	11.87	6.66	13.26	44.84	10.55	6.35	11.60	41.58	10.84	9
10th	22.03	3.00	6.40	22.28	3.03	10.87	6.49	13.59	44.15	11.11	6.27	11.58	41.22	10.69	10
11th	22.95	3.12	7.04	21.87	2.98	11.07	6.41	12.06	44.36	9.46	6.12	11.35	41.17	10.49	11
12th	22.84	3.11	8.33	21.38	2.91	13.91	6.38	14.08	43.95	12.33	6.04	12.74	41.20	11.97	12
13th	22.78	3.10	6.69	20.68	2.85	14.55	6.25	15.07	42.53	13.08	5.92	14.12	40.19	12.15	13
14th	22.54	3.07	4.50	20.10	2.74	14.88	6.13	14.49	41.84	12.61	5.87	13.82	39.07	11.74	14
15th	22.44	3.06	7.43	19.71	2.68	15.01	6.05	15.80	44.19	14.31	5.83	14.81	39.12	9.70	15
16th	22.95	3.12	6.25	19.54	2.66	15.38	5.86	16.45	43.19	14.16	5.78	14.95	39.55	8.08	16
17th	22.88	3.12	6.68	18.49	2.58	15.33	5.64	15.32	39.03	14.14	5.60	13.17	38.64	11.28	17
18th	22.35	3.05	9.07	18.49	2.52	15.84	5.55	15.77	38.16	15.36	5.54	11.63	38.43	10.63	18
19th	21.63	2.95	7.27	18.22	2.48	15.47	5.52	16.55	38.01	15.41	5.60	11.38	38.71	10.80	19
20th	21.36	2.91	10.08	18.22	2.48	16.98	5.86	18.06	37.37	16.31	5.64	10.81	37.82	11.91	20
21st	21.39	2.92	10.69	17.80	2.43	17.11	5.23	17.31	35.87	16.43	5.41	12.68	37.63	12.24	21
22d	26.70	3.81	8.24	21.54	3.14	14.99	6.35	15.49	44.55	13.24	5.88	11.03	42.35	9.01	22
23d	25.83	3.69	8.52	21.73	3.10	13.49	6.27	14.87	43.96	12.77	5.82	11.13	41.28	11.64	23
24th	25.58	3.65	6.59	21.70	3.09	11.82	6.27	13.47	43.59	12.27	5.73	10.98	39.69	10.65	24
25th	26.23	3.74	4.26	21.93	3.14	9.95	6.29	10.51	44.39	10.02	5.75	8.91	39.70	8.28	25
26th	26.27	3.75	5.45	21.67	3.09	10.67	6.11	11.01	44.07	11.63	5.75	9.05	40.61	7.40	26
27th	33.06	4.59	4.93	26.78	3.72	9.82	6.67	10.63	50.12	9.75	6.28	4.24	44.60	7.66	27
28th	33.60	4.66	4.89	27.18	3.77	8.70	6.72	9.48	50.35	9.64	2.51	3.52	44.51	8.67	28
29th	33.15	4.60	4.11	27.12	3.76	7.45	6.69	8.50	50.72	7.66	3.81	3.74	44.04	8.62	29
30th	33.02	4.58	4.09	26.83	3.72	8.48	6.56	8.67	52.04	5.72	6.41	6.63	44.42	8.05	30
31st	35.24	4.67	7.32	26.43	3.71	8.38	6.66	7.62	53.70	6.76	6.05	4.11	40.53	7.60	31

TABLE NO. 5.—*Summary of the results of Experiments for each pen, including the total gain, etc.*

No. of pen and description of feed consumed.	Weight of sheep, Nov. 2d, 1867.	Greatest Weight.	Total gain.	Gain per cent.	Total feed consumed.	Total value of feed consumed.	Average amount of feed consumed per week, by each 100 lbs of live weight.	Value of feed consumed per week, for each 100 lbs. live weight.	Weight of wool.	Value of wool at 30 cents per lb.	Incr'e in live weight after deducting the weight of wool, lbs.	Val. of feed for each 100 lbs increase of live weight, except of wool.
No. 1. Roots, corn, hay ...	175.50	200.00	24.5	13.96	Roots, 1,217 95 Corn, 174.93 Hay, 427.93	$2 03 3 12 2 56 $7 71	Roots, 20 92 Corn, 3.00 Hay, 7.35	0.03.5 0 05.4 0 04.4 $0.13.3	22.0	$6 60	2.5	$44 40
No. 2. Roots, corn, hay ...	169.50	237.00	67.50	39.82	Roots, 1,245.50 Corn, 178.12 Hay, 749.51	$2 08 3 18 4 49 $9 75	Roots, 19.77 Corn, 2.82 Hay, 11.89	0.03.2 0.05.0 0.07.0 $0.15.2	24.75	$7 43	42.75	$5 43
No 3. Corn and hay	173.00	261.00	88.00	50.86	Corn, 392.55 Hay, 857.48	$7 00 5 14 $12 14	Corn, 5.83 Hay, 12.75	0.10.4 0.07.7 $0.18 1	26.0	$7 80	62.00	$7 0
No. 4. Roots and hay.....	169.50	215.00	45.50	26.84	Roots, 2,286 80 Hay, 672.33	$3 81 4 03 $7 84	Roots, 38.37 Hay, 11.25	0.06.0 0.06.8 $0.12.8	20.25	$6 08	25.25	$6 97

No. 5. Corn and hay......	229.00	311.50	82.50	36.02	Corn, 443.93 Hay, 862.92	$7 92 5 17 $13 09	Corn, 5.30 Hay, 10 30	0.09.5 0.06.0 $0.15.5	22.25	$6 68	60.25	$10.64
No. 6. Roots and hay.....	244.00	300.50	56.50	23.15	Roots, 3,140.04 Hay, 852.46	$5 23 5 11 $10 34	Roots, 37.20 Hay, 10.10	0.06.0 0 06.0 $0.12.0	20.50	$6 15	36.00	$11 64

In the foregoing table, (No. 5,) a summary of the results of the experiment is given for each pen, including the total gain, gain per cent., total feed consumed, value of feed consumed, average amount of feed consumed per week for each 100 lbs. of live weight; the value of feed consumed per week for each 100 lbs. of live weight, the weight of wool and its value, the total increase in live weight after deducting the weight of wool, and the value of feed consumed to produce 100 lbs. of increase of live weight exclusive of wool. In making this table, hay has been estimated at $12.00 per ton; corn at $1.00 per bushel, and roots at 10 cents per bushel.

In the experiments of last year, roots were estimated at 16 cents per bushel, which is undoubtedly much too high when compared with corn at $1.00 per bushel. The amount of dry substance is, perhaps, the best standard we now have for estimating the relative feeding value of different foods. From a comparison of the amount of dry substance in corn and roots, it will be seen that nearly nine bushels of roots will be required to equal a bushel of corn. With corn at $1.00 per bushel, roots should be worth about 11 cents per bushel. As ten was a convenient factor to use in making the table, the price of the roots was fixed at 10 cents per bushel.

By comparing the figures in the last column of the table in Pens Nos. 3 and 4, and in Pens Nos. 4 and 5, it will be seen that the relative value of the corn and roots is very nearly as estimated, so far at least as the results of this experiment are concerned.

The sheep were all sheared at the close of the experiment, June 6th, and the fleeces carefully weighed, with the exception of sheep No. 2, in Pen No. 1, and sheep No. 1, in Pen No. 5, which had been removed from the pen on account of sickness. The fleeces of these sheep were not in condition for accurate weighing, and they were therefore entered on the record at a low estimate. It should be stated that the sheep were all thoroughly "tagged," several weeks before shearing. In Table No. 6, the weight of each fleece unwashed, is given.

TABLE NO. 6.

WEIGHT OF FLEECES IN POUNDS AND DECIMALS OF A POUND.

No. of sheep.	Pen No. 1.	Pen No. 2.	Pen No. 3.	Pen No. 4.	Pen No. 5.	Pen No. 6.
Sheep No. 1.....	12.00	14.25	13.25	12.75	Est. 9.00	9.50
Sheep No. 2.....	Est. 10.00	10.50	12.75	7.50	13.25	11.00

The wool was of good quality, free from gum or dirt, and from the length of fibre, well adapted to the manufacture of delaines, or for combing purposes. The wool has not been sold. (See supplement at end of chapter.) The estimated value in Table No. 5, is, without doubt, considerably below the present market price.

The sheep in Pens Nos. 5 and 6, as has already been stated, were fed in the same pens in the experiment of 1867. In the following table (No. 7), the results of the combined experiments are given, including the total gain from the beginning of the first to the close of the last experiment, the total weight and value of wool produced, the total gain in live weight, exclusive of the wool of 1868, the total value of feed consumed, the total value of feed consumed less the value of wool, and the cost of 100 lbs. increase of live weight, exclusive of wool:

TABLE No. 7.

Pen.	Total gain from Dec. 13, 1866, to June 5, 1868.	Total wool produced.	Value of wool at 30c per lb.	Total increase of live weight, exclusive of wool.	Total value of feed consumed.	Total value of feed less the value of wool.	Cost of 100 pounds of increase of live weight, exclusive of wool.
No. 5.......	153.50	42.25	$12 68	131.25	$23 54	$10 86	$8 28
No. 6.......	139.00	37.69	11 31	118.50	17 59	6 28	5 30

In the preceding tables, the value of the animal, or its actual cost at the commencement of the experiment, has not been taken into account.

The results of our experiments in pig feeding, show conclusively that animals, when properly fed, give a much better return for the feed consumed, during the first few months of their lives, than they do after they reach maturity. There is not within my knowledge any definite statement on record, of the actual cost of the growth of lambs up to the period of maturity. As this must be an important item in determining the profits of sheep raising, I propose to make it a special subject of investigation, as soon as facilities for conducting the experiments in a satisfactory manner are placed at my disposal.

In the absence of accurate data, the cost of the growth of the sheep, at the beginning of the experiments, has been estimated at two dollars per head at the age of six and one-half months, and at two dollars and forty cents per head at the age of eight months. As the lambs had been in the pasture during the summer, without any artificial feed, the estimate will probably be considered high enough to cover the actual cost of their growth.

In Table No. 8 is given the results of the period of experimental feeding, combined with the preliminary period as above estimated. The greatest weight of the sheep is given in the second column, as it is a fairer representation of the return for the feed consumed than the weight at the close of the experiment, when losses had been made, as before explained:

TABLE No. 8.

Number of pen, description of sheep, age of sheep at beginning of experiment, and kind of feed for each pen.	Greatest weight of sheep.	Weight of wool	Greatest weight of sheep, after deduct'g weight of wool for '68.	Age of sheep at close of experiment, in months	Estimated cost of sheep at beginning of experiment.	Cost of feed during the experiment.	Total value of wool, at 30 cts. per lb.	Total cost of sheep, after deducting value of wool	Cost of 100 lbs. live weight, exclusive of wool.
No. 1. Two half-blood Cotswolds, 6½ months old. Roots, corn and hay.	200.00	22 00	178.00	13½	$4 00	$7 71	$6 60	$5 11	$2 87
No. 2. Two half-blood Cotswolds, 6½ months old. Roots, corn and hay.	237.00	24.75	212 25	13½	$4 00	$9 75	$7 43	$6 32	$2 98
No. 3. Two half-blood Cotswolds, 6½ months old. Corn and hay.	261.00	26.00	235.00	13½	$4 00	$12 14	$7 80	$8 31	$3 55
No. 4. Two half-blood Cotswolds, 6½ months old. Roots and hay.	215.00	20.25	194.75	13½	$4 00	$7 84	$6 08	$5 76	$2 96
No. 5. Two half-blood Cotswolds, 8 months old. Corn and hay.	311.50	42.25	289.25	25½	$4 80	$23 54	$12 68	$15 66	$5 41
No. 6. Two half-blood Cotswolds, 8 months old. Roots and hay.	300.50	37.69	280.00	25½	$1 80	$17 50	$11 31	$11 08	$3 96

The average cost of 100 lbs. live weight, exclusive of the wool, is $3.11 at the age of thirteen and one-half months, as shown in Pens Nos. 1, 2, 3 and 4, while the average cost is $4.70 at the age of twenty-five and one half months, as shown in Pens No. 5 and 6.

A single experiment is not, of course, sufficient to establish a principle of feeding, as variations in the feeding qualities of the animals under experiment may produce greater differences than those above noted. The marked agreement, however, of the results given in Table No. 8 with the experiments here in pig feeding, in 1866 and 1868, and with the extensive series of experiments in the feeding of sheep, oxen and pigs, conducted by Messrs. Lawes & Gilbert, in England, would indicate that the difference in the cost of production is owing to a difference in the maturity of the animals.

For the further illustration of this fact, the experiments in pig-feeding, which follow, may be examined. A comparison of the figures in the last column of Table No. 8 will show that, on the average, the roots, corn and hay gave the best return; the roots and hay the next best return; and that the corn and hay alone gave the least return on their estimated value.

SUPPLEMENT TO REPORT ON EXPERIMENTS IN SHEEP FEEDING.

Since the above report was placed in the hands of the printer, our wool has been sold in Boston. The Grade Cotswold wool, from the experimental sheep, sold at 44 cts. per lb., while the Merino and Grade Merino sold at 33 cts. per lb. (all unwashed).

After deducting freight, commissions, &c., say 4 cts. per lb., the value of the wool here should be reckoned at 40 cts. per lb., instead of 30 cts., the prices estimated in the tables. The following corrections should therefore be made in the tables:

Correction of Table No. 7.

Pen.	Total value of wool at 40 cents per lb.	Total value of feed, less the value of wool.	Cost of 100 pounds increase of live weight, exclusive of wool.
No. 5	$16 90	$6 64	$5 06
No. 6	15 08	2 51	2 12

CORRECTIONS IN TABLE NO. 8.

Pen.	Total value of wool at 40 cents per pound.	Total cost of sheep after deducting the value of wool.	Cost of 100 pounds of live weight, exclusive of wool.
No. 1	$8 80	$2 91	$1 63
No. 2	9 90	3 85	1 81
No. 3	10 40	5 74	2 44
No. 4	8 10	3 74	1 92
No. 5	16 90	11 44	3 96
No. 6	15 08	7 31	2 61

To make the above statements complete, a charge should be made for attendance, and a credit given for the manure produced. As these items cannot be ascertained with sufficient accuracy to add to the value of the experiment, they have therefore been omitted altogether.

M. MILES,

Professor of Practical Agriculture in Michigan Agricultural College.

EXPERIMENTS IN PIG FEEDING.

Six grade Essex sow pigs, two weeks old, all of the same litter, were taken from their dam on the evening of May 23d, and placed in a pen for experimental feeding. On the morning of the 24th they weighed collectively, twenty-two and one-half pounds. They were fed on milk, which was wasted to a considerable extent the first two days, while they were learning to drink, so that the experiment was not commenced until the morning of the 26th, when they weighed together, before feeding, twenty-five pounds.

The pigs were got by an Essex boar belonging to the College Farm, out of a sow that was supposed to be three-fourths Essex. The pigs were so nearly alike in appearance that it was difficult to perceive any difference, in either form or quality.

The feed was carefully weighed each day, and the pigs were weighed at the close of each week, in the morning, before feeding.

On the morning of June 9th, two pens of the same size were provided and three pigs were placed in each pen. As there was a slight difference at this time in the apparent size of the pigs, the three heaviest were placed in the pen marked A, and the three lightest were placed in the pen marked B. On weighing, it was found that the three in pen A weighed 34.5 lbs., and the three in pen B weighed 40.5 lbs.

The feed throughout the experiment was the same for each pen, to the close of the 24th week, when a limited ration of roots was given to the pigs in pen A. A few oats were fed the 4th and 5th weeks, but as they were not readily eaten, a small quantity of shelled corn was substituted at the beginning of the sixth week. The corn produced scours in all the pigs, so that it was not fed the third day. The scouring immediately stopped, and the corn was again given in diminished quantity. As it was not readily eaten in pen B, and was rejected entirely in pen A, corn meal was substituted the seventh week.

As the pigs became used to the meal, the quantity was gradually increased, while the milk was diminished, until the close of the 8th week, when it was entirely discontinued. The feed in both pens, from the beginning of the ninth week to the close of the 24th week, was corn meal and water exclusively. The meal was weighed and then mixed with water before feeding. But a small quantity was fed at once; as soon as this was eaten a fresh supply was placed in the trough. From four to six feeds were given each day; the meal being carefully weighed each time, and a record made of the amount on the spot.

The pigs were weighed separately after the third week; each one being designated by a number. Pigs No's 1, 2 and 3 were in pen A, and pigs No's 4, 5 and 6 were in pen B. The seventh week of the experiment, pig No. 6, in pen B, met with an accident that would probably have interfered with the progress of the experiment, and it was therefore killed Its live weight was 30 lbs, and its dressed weight 23 lbs.

In table No. 1 is given the weight of the pigs at the close of each week and the average weight for each week.

The average weight is found by adding the weight at the beginning of the week, to the weight at the close of the week, and dividing the sum by two. The weights in this and the following tables, are given in pounds and decimals of pounds.

TABLE No. 1.

WEIGHT OF PIGS AT THE CLOSE OF EACH WEEK, AND AVERAGE WEIGHT OF EACH PEN FOR EACH WEEK.

Date of weighing.	Week of experiment.	Weight of pigs at the close of each week, in lbs. and decimals.		Average weight for each week, in lbs. and decimals.	
1868. May 26th.......	Beginning of experiment.	25.0 Six pigs.			
June 2d........	1st week.......	46.5 Six pigs.		35.75 Six pigs.	
		PEN A. Pigs Nos. 1, 2, and 3.	PEN B Pigs Nos. 4,5, and 6.		
June 9th.......	2d week........	43.50	40.50	65.25 Six pigs.	
				PEN A. Pigs Nos. 1, 2, and 3.	PEN B. Pigs Nos. 4,5, and 6.
June 16th......	3d week........	52.50	54.00	48 00	47.25
June 23d.......	4th week.......	1. 21.00 2. 23.00 3. 22.50 66.50	4 23.50 5. 23.00 6. 23.00 69.50	59.50	61.75
June 30th......	5th week.......	1. 24.50 2. 27.50 3. 27.00 79.00	4. 29.50 5. 27.50 6. 28.50 85.50	72.75	77.50

TABLE No. 1—Continued.

Date of weighing.	Week of experiment.	Weight of pigs at the close of each week, in lbs. and decimals.		Average weight for each week, in lbs. and decimals.	
		PEN A.	PEN B.	PEN A.	PEN B.
July 7th........	6th week........	1. 27.75 2. 31.00 3. 31 50	4. 32.25 5. 31.00 6. 30.00	84.12	89.37
		89.25	93.25		
July 14th........	7th week	1. 30.00 2 32.75 3. 34.50	4. 42.00 5. 38.50	93.25	71.87
		97.25	80.50		
July 21st........	8th week........	1. 31.50 2. 33.25 3. 35.75	4. 48.50 5. 44.00	98.87	86.50
		100.50	92.50		
July 28th........	9th week........	1. 31.00 2. 32.00 3. 38.50	4. 55.00 5. 48.50	101 00	98.00
		101.50	103.50		
August 4th......	10th week.......	1. 31.50 2. 33 50 3. 38.50	4. 62.50 5. 54.50	102.50	110.25
		103.50	117.00		
August 11th.....	11th week.......	1. 32 50 2. 35.00 3. 40.50	4. 71.50 5. 61.00	105.75	124.75
		108.00	132.50		
August 18th	12th week	1. 36 00 2. 38 00 3. 47.00	4. 80.00 5. 64.00	114.50	138.25
		121.00	144.00		

TABLE No. 1.—Continued.

Date of weighing.	Week of experiment.	Weight of pigs at the close of each week, in lbs. and decimals.		Average weight for each week, in lbs. and decimals.	
		PEN A.	PEN B.	PEN A.	PEN B.
August 25th	13th week	1. 38.50 2, 41.00 3. 54.00	4. 85.50 5. 65.50	127.25	147.50
		133.50	151.00		
September 1st ...	14th week	1. 41.50 2. 44.00 3. 62.00	4. 88.00 5. 71.00	140.50	155.00
		147.50	159.00		
September 8th ...	15th week	1. 40.50 2. 46.00 3. 64.50	4. 93.50 5. 73.00	149.25	162.75
		151·00	166.50		
September 15th..	16th week	1. 42.00 2. 49.50 3. 71.50	4. 100.50 5. 79.50	157.00	173.25
		163.00	180.00		
September 22d...	17th week	1. 42.50 2. 51.00 3. 78.50	4. 108.50 5. 79.00	169.50	183.75
		172.00	187.50		
September 29th..	18th week	1. 43.00 2. 54.00 3. 86 00	4. 119.00 5. 85.00	177.50	195.75
		183.00	204.00		
October 6th	19th week	1. 45.50 2. 56.00 3 93.50	4. 125.50 5. 90 00	189.00	209.75
		195.00	215.50		

TABLE No. 1.—Continued.

Date of weighing.	Week of experiment.	Weight of pigs at close of each week, in lbs. and decimals.		Average weight for each week, in lbs. and decimals.	
		PEN A.	PEN B.	PEN A.	PEN B.
October 13th.....	20th week	1. 53.00 2. 60.00 3. 101.00 214.00	4. 131.00 5. 96.50 227.50	204.50	221.50
October 20th	21st week.......	1. 48.00 2. 60.00 3. 106.00 214.00	4. 132.00 5. 98.00 230.00	214.00	228.75
October 27th.....	22d week	1. 50.00 2. 63.00 3. 111.00 224.00	4. 135.00 5. 102.00 237.00	219.00	233.50
November 3d	23d week	1. 50.00 2. 63.00 3. 115.50 228.50	4. 141.50 5. 106.50 248.00	226.25	242.50
Nov. 10th........	24th week	1. 52.00 2. 64.00 3. 120. 0 236.50	4. 148.50 5. 118.50 267.00	232.50	257.50
Nov. 17th........	25th week	1. 54.00 2. 65.50 3. 122.00 241.50	4. 150.50 5. 124 00 274.50	239.00	270.75
Nov. 24th........	26th week	1. 56.00 2. 66.50 3. 125.00 247.50	4. 153.00 5. 129.50 282.50	244.50	278.50

TABLE No. 1—Continued.

Date of weighing.	Week of experiment.	Weight of pigs at the close of each week, in lbs. and decimals.		Average weight for each week, in lbs. and decimals.	
		Pen A.	Pen B.	Pen A.	Pen B.
Dec. 1st..........	27th week.......	1 57.50 1. 67.50 3. 130.00	4. 154.50 5. 136.00	251.25	286.50
		255.00	290.50		
Dec. 8th..........	28th week.......	1. 59.00 2. 69.00 3. 133 00	4. 156.00 5. 142.00	258.00	292.25
		261.00	298.00		
Dec. 15..........	29th week.......	1. 60.50 2. 70.50 3. 135.50	4. 156.00 5 145 50	263 75	299.75
		266.50	301.50		

In table No. 2 is given the amount of feed consumed in each pen for each week, the gain per cent. in each pen for each week, and the average gain per cent. in both pens. The gain per cent. is found by proportion from the weight given in Table No. 1. For example, the weight of the pigs in Pen A, at the beginning of the third week is, 43.50 (the weight given at the close of the 2d week). The gain for the week is nine pounds.

43.50 : 100 : : 9 : To the gain per cent.
100

43.5)900(20.689
870

3000
2610

3900
3480

4200
3915

285

The gain per cent. the third week is therefore 20.69 lbs., as shown in Table No. 2.

TABLE No. 2.

AMOUNT OF FEED CONSUMED IN EACH PEN FOR EACH WEEK, AND GAIN PER CENT. FOR EACH WEEK.

	FEED CONSUMED EACH WEEK.				GAIN PER CENT. FOR EACH WEEK.		
					Pen A.	Pen B.	Aver'ge.
1st week.....	140.50 lbs. milk				....	....	86.00
2d week	288.75 lbs. milk				....	....	80.65
	Pen A.		Pen B.				
	Milk.	Corn, Meal, etc.	Milk.	Corn, Meal, etc.			
3d week......	133.50	....	148.25	....	20.69	33.33	26.79
4th week	144.00	Oats, 1.00	167.50	Oats, 1.00	26.66	28.70	27.70
5th week	126.50	Oats, 1.50	178.25	Oats, 1.25	18.80	23.02	20.96
6th week	96.25	Corn, 0.875	104.75	Corn, 1 00	12.97	9.06	10.94
7th week	84.75	Corn Meal, 3.125	95 75	Corn Meal, 6.50	8.96	27.27	16.56
8th week	64.00	5.25	89.25	16.50	3.34	14.91	8.58
9th week	....	13.50	....	37.00	1.00	11.89	6.22
10th week ...	....	20.50	....	48.00	1.97	13.04	7.56
11th week ...	....	25.00	....	58.00	4.35	13.25	9.07
12th week ...	....	37 00	....	53.50	12.04	8.68	10.19
13th week ...	....	45.00	....	41.00	10.33	4.86	7.36
14th week ...	....	47.00	....	25.00	10.49	5.30	7.74
15th week ...	....	33.00	....	44.00	2.37	4.72	3.59
16th week ...	....	40.00	....	36.00	7.94	8.11	8.03
17th week ...	....	40.09	....	46.00	5.52	4.17	4.81
18th week ...	....	48.00	....	58.00	6.40	8.80	7.65
19th week ...	....	51.00	....	53.00	6.56	5.64	6 07
20th week ...	....	54.00	....	43.50	9.74	5.57	7.55
21st week....	....	49.00	....	39.50	No gain.	1.10	0.57
22d week.....	....	48.50	....	46.50	4.67	3.04	3.82
23d week.....	....	47.00	....	57.00	2.01	4.64	3.36
24th week ...	....	55.50	....	64.00	3.50	7.66	5.67
25th week ...	Roots, 9.50	40.00	....	48.50	2 11	2.81	2.48
26th week ...	15.00	41.50	....	42.00	2.48	2.91	2.71
27th week ...	17.50	46.50	....	49.00	3.03	2.83	2.92
28th week ...	17.50	42.00	....	46 00	2.35	2.58	2.47
29th week ...	15.00	44.00	....	41.00	2.11	1.17	1.61

At the close of the experiment, December 15th, pigs Nos. 3, 4 and 5 were killed. The live weight, the dressed weight, and the shrinkage of each, was found to be as follows:

	Pig No. 3.	Pig No. 4.	Pig No. 5.
Live weight	135.50	156.00	145.50
Dressed weight	112.50	132.50	122.00
Shrinkage	23.00	23.50	23.50

Pigs Nos. 1 and 2 were not killed, as they were only in fair store condition.

The following measurements, taken on the morning of the 15th, will show that they had made a fair growth of carcass, without fattening:

	Pig No. 1	Pig No. 2.	Pig No. 3.	Pig No. 4.	Pig No. 5.
Length	2 ft. 6 inch.	2 ft. 8 inch.	2 ft. 11 inch.	3 ft. 0 inch.	3 ft. 3 inch.
Heighth	1 ft. 4½ "	1 ft. 8 "	1 ft. 8½ "	1 ft. 6 "	1 ft. 5½ "
Girth	2 ft. 4 "	2 ft. 7 "	3 ft. 6½ "	3 ft. 8 "	3 ft. 5½ "

In table No. 3 is given the amount of feed consumed per week for each 100 lbs. of live weight, and the amount of feed required to produce one pound of increase of live weight for each week. In the remarks on table No. 4, in the report on sheep feeding, the method of obtaining the amount of feed consumed for each 100 lbs. of live weight is fully explained.

The amount of feed required to produce one pound of increase per week in each pen is obtained by dividing the feed consumed each week by the gain in live weight for each week. The average amount of feed required to produce one pound of increase for each week is obtained by dividing the amount of feed consumed in both pens for the week by the gain in both pens for the week.

TABLE NO. 3.—*Feed consumed per week for each one hundred pounds of live weight, and amount of feed required to produce one pound of increase for each week.*

Number of Week.	FEED CONSUMED PER WEEK FOR EACH 100 POUNDS OF LIVE WEIGHT.		FEED REQUIRED TO PRODUCE ONE POUND OF INCREASE FOR EACH WEEK.		
			Pen A.	Pen B.	Average.
1st week	Milk, 393 01				Milk, 6.54
2d week	Milk, 442.53				7.70
	Pen A.	Pen B.			
3d week	Milk, 278.13	Milk, 313.12	Milk, 14 83	Milk, 10.98	12.52
4th week	Milk, 242.02 Oats, 1.68	Milk. 271.26 Oats, 1.62	Milk, 10.29 Oats, .07	Milk, 10.82 Oats, .06	Milk, 10.56 Oats, .07
5th week	Milk, 173 88 Oats, 2.06	Milk, 230.00 Oats, 1.61	Milk, 10.12 Oats, 0.12	Milk, 11 14 Oats, 0.08	Milk, 10.65 Oats, 0.10
6th week	Milk, 114.42 Corn, 1.04	Milk, 117.21 Corn, 1.13	Milk, 9.39 Corn, .09	Milk, 13.52 Corn, 0.13	Milk, 11.17 Corn, 0.10
7th week	Milk, 90.88 Corn Meal, 3.55	Milk, 133 22 Corn Meal, 9.04	Milk, 10.59 Corn Meal, 0.39	Milk, 5.55 Corn Meal, 0.38	Milk, 7.15 Corn Meal, 0 38
8th week	Milk, 64.73 Corn Meal, 5.31	Milk, 103.18 Corn Meal, 19.07	Milk, 16.69 Corn Meal, 1.62	Milk, 7.44 Corn Meal, 1.38	Milk, 10.05 Corn Meal, 1.43
9th week	Corn Meal, 13.37	Corn Meal, 37.76	Corn Meal, 13 50	Corn Meal, 3 36	Corn Meal, 4.21
10th week	20.00	43.54	10.25	3.55	4 42
11th week	23.64	46.49	5.56	3.74	4.15
12th week	32.31	38 69	2.85	4.65	3 69
13th week	35.36	27.79	3.60	5.86	4.41
14th week	33.45	16.13	3.36	3.13	3.27
15th week	22.11	27 03	9.43	5.87	7.00
16th week	25.47	20.78	3 33	2 67	2.98
17th week	23.88	25.03	4.44	6.13	5.21
18th week	27.04	29 63	4.36	3.52	3.85
19th week	26 98	25.27	4.25	4.61	4 43
20th week	26.41	19.64	2.84	3.63	315
21st week	22.90	17.27	No gain.	19.80	....

TABLE No. 3—Continued.

Number of Week.	Feed Consumed Per Week for Each 100 Pounds of Live Weight.		Feed Required to Produce One Pound of Increase for Each Week.		
	Pen A.	Pen B.	Pen A.	Pen B.	Average.
22d week	22.15	19.92	4.85	6 64	5.59
23d week	20.77	23 51	10.44	5 18	6.71
24th week	23.91	24.85	6.94	3.37	4.43
25th week	Meal, 16 73 Roots, 3.97	17.91	Meal, 8.00 Roots, 1 90	6.47	Meal, 7.08 Roots, .76
26th week	Meal, 16.97 Roots, 6.13	15.08	Meal, 6 92 Roots, 2.50	5.25	Meal, 5.96 Roots, 1.07
27th week	Meal, 14.53 Roots, 6.96	17.10	Meal, 6.20 Roots, 2.33	6.13	Meal, 6 16 Roots, 1.13
28th week	Meal, 16.28 Roots, 6.78	15.74	Meal, 7.00 Roots, 2.92	6.13	Meal, 6 51 Roots, 1.30
29th week	Meal, 16.67 Roots, 5.69	13.68	Meal, 8.00 Roots, 2.76	11.71	Meal, 9.44 Roots, 1.67

An examination of Table No. 1 will show that pigs Nos. 1 and 2 did not make as rapid increase in weight as the others. The change of feed from milk to meal, so far as these pigs were concerned, seemed to check the tendency to lay on fat, and they afterwards made their increase in live weight in bone and muscle.

From this peculiarity in the growth of these pigs, and the observed variations in both pens of the amount of feed required to make a pound of increase per week, it was thought desirable to ascertain the amount of feed consumed by each individual, and the return obtained for it in increase of live weight. At the beginning of the 21st week each pig was accordingly placed in a pen by itself, and a separate weighing of the feed was made during the remaining nine weeks of the experiment. For the sake of uniformity in the preceding tables, the results of the last nine weeks are given for pens A and B, as if a separation of the pigs had not been made.

In the following tables (Nos. 4, 5, 6 and 7,) will be found the amount of feed consumed, the gain per week, the amount of feed consumed for each 100 lbs. of live weight, and the amount of feed required to produce one pound of increase for each pig, for each week, from the 21st to the 29th, inclusive. The effects of the change were shown, as had been anticipated, in a diminished consumption of food, and a decided increase in the amount of feed to produce a pound of gain, during the 21st week.

After becoming accustomed to their new quarters, pigs Nos. 3, 4 and 5 seemed to feed well, and the increase per week was as uniform as could be expected. Pigs Nos. 1 and 2 had been very restless for several weeks before the change in pens was made, and their behavior afterwards was not in the least improved, until a ration of roots was added to their feed the 25th week.

TABLE NO. 4.

AMOUNT OF FEED CONSUMED BY EACH PIG FOR EACH WEEK, FROM THE TWENTY-FIRST TO THE TWENTY-NINTH, INCLUSIVE.

Week.	PIG NO. 1.		PIG NO. 2.		PIG NO. 3	PIG NO. 4	PIG NO. 5
	Meal.		Meal.		Meal.	Meal.	Meal.
21st	11.00		12.50		25.50	23.00	16.50
22d	12.00		14.50		22.00	22.50	24.00
23d	11.00		11.00		24.50	28.00	29.00
24th	14.00		13.50		28.00	31.00	33.00
	Meal.	Roots.	Meal.	Roots.			
25th	9.00	6.00	9.00	3.50	22.00	20.50	28.00
26th	10.00	10.00	9.50	5.00	22.00	17.00	25.00
27th	12.00	10.50	10.50	7.00	24.00	21.00	28.00
28th	11.00	10.50	11.00	7.00	20.00	18.00	28.00
29th	12.00	8.00	13.00	7.00	18.50	15.00	26.00

TABLE NO. 5.

INCREASE PER WEEK OF PIGS IN EACH PEN.

Week.	Pig No. 1.	Pig No. 2.	Pig No. 3.	Pig No. 4.	Pig No. 5.
21st	Loss 5.00	No gain.	5.00	1.00	1.50
22d	2.00	3.00	5.00	3 00	4.00
23d	No gain.	No gain.	4 50	6.50	4.50
24th	2 00	1.00	5.00	7.00	12.00
25th	2.00	1.50	1.50	2.00	5.50
26th	2.00	1.00	3.00	2.50	5.50
27th	1.50	1.00	5.00	1.50	5.50
28th	1.50	1.50	3.00	1.50	6.00
29th	1.50	1 50	2.50	No gain.	3.50

TABLE NO. 6.

FEED CONSUMED FOR EACH ONE HUNDRED POUNDS OF LIVE WEIGHT PER WEEK, FROM THE TWENTY-FIRST TO THE TWENTY-NINTH, INCLUSIVE.

Week.	Pen No. 1.		Pen No. 2.		Pen No. 3.	Pen No. 4.	Pen No. 5.
	Meal.		Meal.		Meal.	Meal.	Meal.
21st	21.78		20.83		24.64	17.49	16.96
22d	24.49		23.58		20.28	16.85	24.00
23d	23 00		17.46		21.63	20 25	27.82
24th	27.45		21.26		23.73	21.38	29.33
	Roots.	Meal.	Roots.	Meal.			
25th	11.32	16.98	5.45	13.90	18.14	13.71	23.09
26th	18.18	18.18	7.57	14.39	17.81	11.20	19.72
27th	18.52	21.14	10.44	15.67	18 82	13.65	21.09
28th	18.02	18.88	11.25	16.12	15.21	11.59	20.14
29th	13.72	20.92	10.03	18.63	13 78	9.62	18.09
Average	16.00	20.17	8.79	17.79	19.39	15.18	21.81

TABLE NO. 7.

AMOUNT OF FEED FOR ONE POUND OF GAIN PER WEEK, FROM THE TWENTY-FIRST TO THE TWENTY-NINTH WEEK, INCLUSIVE.

Week.	Pen No. 1.		Pen No. 2.		Pen No. 3.	Pen No. 4.	Pen No. 5.
	Meal.		Meal.		Meal.	Meal.	Meal.
21st	Lost 5 lbs.		No gain.		5.10	23.00	11.00
22d	6.00		4.83		4.40	7.50	6.00
23d	No gain.		No gain.		5.44	4.31	6.44
24th	7.00		13.50		5.60	4.43	2.75
	Roots.	Meal.	Roots.	Meal.			
25th	3.00	4.50	2.33	6.00	14.66	10.25	5.09
26th	5.00	5.00	5.00	9.50	7.33	6.80	4.55
27th	7.00	8.00	7.00	10.50	4.80	14.00	5.09
28th	7.00	7.33	4.66	7.33	6.66	12.00	4.67
29th	5.33	8.33	4.66	8.66	7.40	No gain.	7.43
Average	5.29	8.24	4.54	9.95	5.99	7.84	4.85

A comparison of these tables with the results given for each pen in Table No. 3, will explain some of the variations from week to week, that would otherwise appear anomalous. For instance, in Table No. 3, the amount of food required to produce a pound of increase in Pen A, is 4.85 lbs. for the 22d week; 10.44 lbs. for the 23d, and 6.94 lbs. for the 24th week. Table No. 5 shows that Pig No. 1 gained 2 lbs. the 22d week, nothing the 23d week, and 2 lbs. the 24th week. Pig No. 2 gained 3 lbs. the 22d week, nothing the 23d week, and 1 lb. the 24th week. Pig No. 3 gained 5 lbs. the 22d week, 4.50 lbs. the 23d week, and 5 lbs. the 24th week.

Table No. 7 shows that Pig No. 3 made 1 lb. of increase from 4.40 lbs. of meal the 22d week, from 5.44 lbs. of meal the 23d week, and from 5.60 lbs. of meal the 24th week.

From this it is seen that the unusual amount of feed required to produce a pound of increase in Pen A, the 23d week, as recorded in Table No. 3, is caused by the irregular growth of Pigs Nos. 1 and 2.

The following Table No. 8, shows the return in increase of live weight for the meal consumed in Pen B, for five periods of four weeks each, beginning with the 9th week, and ending with the 28th week. The 29th week is not included, as it was thought best to make the periods of uniform length.

The derangement of the digestive organs of the pigs in Pen A, produced by the change of feed from milk to meal, as already noticed, would, of course, prevent any satisfactory comparison of results for the different periods, and they have accordingly been omitted from the table. From the 5th to the 8th week, inclusive, the feed in both pens consisted of milk and meal, in varying proportions, so that the results of the feeding during this period cannot well be compared with the periods in which the feed was limited to a single article of diet.

TABLE No. 8.—*Total increase, total feed consumed, feed consumed for each one hundred pounds of live weight, feed required to produce one pound of increase, and the gain per cent. in Pen B in periods of four weeks, from the 9th to the 28th, inclusive.*

Periods.	Total increase.	Total meal consumed.	Meal consumed for each 100 lbs. of live weight per week.	Meal required to procure one pound of increase.	Average gain per cent. per week.	Average weight for each period.
1st Period. 9th, 10th, 11th, 12th weeks.	51.50	196.50	41.54	3.81	11.71	118.25
2d Period. 13th, 14th, 15th, 16th weeks.	36.00	146.00	22.53	4.06	5.75	162.00
3d Period. 17th, 18th, 19th, 20th weeks.	47.50	200.50	24.60	4.22	6.04	203.75
4th Period. 21st, 22d, 23d, 24th weeks.	39.50	207.00	20.93	5.24	4.11	247.25
5th Period. 25th, 26th, 27th, 28th weeks.	31.00	185.50	16.41	5.98	2.90	282.50
Result for total period of 20 weeks.	205.50	935.50	23.96	4.55	6.10	195.25

The third column shows a marked decrease in the amount of feed consumed for each 100 pounds of live weight, as the pigs approach maturity. Under favorable circumstances the decrease in consumption for each period should be uniformly known throughout the experiment. It will be seen that the total amount of feed consumed the second period is over fifty pounds less than was consumed in either the first or third periods. The amount of feed consumed for each 100 pounds of live weight, during the 2d period, as shown in the table, is therefore probably lower than it would be, with an average consumption of food for the period.

An examination of table No. 1 will show that Pig No. 5 lost weight the 17th week, so that the amount of feed consumed for each 100 pounds of live weight, for the 3d period, as given in the table, is probably higher than it would be with a uniform rate of increase. The fourth column of Table No. 8 shows a rapid increase in the amount of feed required to produce a pound of live weight, as the pigs improve in condition. The average amount of meal required to produce a pound of increase in live weight is 4.55 pounds for the whole period of twenty weeks; but 3.81 pounds of meal is required to produce a pound of increase during the 1st period, while in the 5th period 5.98 pounds of meal is required to produce the same result.

During the first four weeks of the experiments, the milk consumed for each 100 pounds of live weight diminishes rapidly as the pigs increase in size, while the milk required to produce a pound of increase as constantly increases.

In the following tables, (Nos. 9 and 10,) are given the amount of milk consumed per week for each pound of live weight, and the amount of milk required to produce a pound of increase per week for the first four weeks of the experiment.

The results of the experiments in pig feeding in 1866, (Report of Michigan State Board of Agriculture, pp. 59 to 62), are likewise included in the tables, for convenience of comparison. The average results of the two experiments are also given.

TABLE No. 9.

	1ST WEEK.		2D WEEK.		3D WEEK.		4TH WEEK.		AV. FOR 4 WEEKS.	
	Average amount of milk consumed for each 1 lb. of live weight of animal.	Gain, per cent	Average amount of milk consumed for each 1 lb. of live weight of animal.	Gain, per cent.	Average amount of milk consumed for each 1 lb. of live weight of animal.	Gain, per cent.	Average amount of milk consumed for each 1 lb. of live weight of animal.	Gain, per cent.	Average amount of milk consumed for each 1 lb. of live weight of animal.	Gain, per cent.
	lbs.		lbs.		lbs.		lbs.		lbs.	
1866—3 Pigs	3.96	75.86	3.32	52.92	2.92	28.20	2.49	28.00	2.98	46.25
1868—6 Pigs	3.93	86.00	4.42	80.65	2.95	26.79	2.57	27.70	3.17	55.28
Average of two experiments.........	3.94	80.93	3.67	66.75	2.93	27.49	2.45	27.85	3.07	50.76

TABLE No. 10.

AVERAGE AMOUNT OF MILK CONSUMED FOR ONE POUND OF INCREASE.

	1st Week.	2d Week.	3d Week.	4th Week.	Average for 4 Weeks.
1866—3 pigs	7.20	7.92	11.81	10.13	9.25
1868—6 pigs	6.54	7.70	12.52	10.56	9.21
Average of two experiments	6.76	7.75	12.28	10.42	9.22

In addition to the milk consumed the fourth week, in the experiment of 1868, one pound of oats was fed in the course of the week. As this extra feed was not sufficient to materially change the results, it was not taken into account in making the tables.

The similarity of the results in these experiments is very striking. Some exceptional variations, however, require an explanation that is readily suggested, by reference to the history of the experiments. It will be seen that more milk was consumed, on the average, for each pound of live weight, during the second, third and fourth weeks of the experiment of 1868, than in the same periods in the experiment of 1866, while during the first week a larger amount was consumed in the experiment of 1866. This variation is undoubtedly owing to the mode of feeding practised in the different experiments during the first week. In 1866 the pigs were fed from a can furnished with a "rubber nipple," which was apparently a satisfactory arrangement, so far as the pigs were concerned. In 1868 the pigs were fed from a trough during the first week, and as they were just learning to drink, they probably did not consume as much in proportion to their live weight as they otherwise would have done.

Had the same method of feeding been adopted in 1868 that was practised in 1866, I have no doubt that the quantity of milk consumed for each pound of live weight during the first week would have been greater than it was during the second week, as shown in table No. 9.

It will be observed that the amount of milk required to produce a pound of live weight, in each of the experiments, is greater during the third week than it is during the fourth week. This exceptional result is easily explained in both cases. In 1866 a "derangement of the digestive organs was observed during this week, as shown in a tendency to constipation." A larger amount of feed was thus required to produce a pound of increase than would otherwise have been necessary. In 1868 the pigs were all together until the third week, when they were divided into two lots, each of which were placed in a separate pen. This change made them restless for several days, and prevented an average return for the feed consumed.

The importance of early maturity in animals raised for the production of meat, is clearly shown in this series of experiments.

In the manufacture of pork, the best return for the feed consumed will undoubtedly be obtained by liberal feeding during the early stages of growth, and we cannot reasonably avoid the conclusion that the same rule is applicable to all animals raised for the purposes of the butcher.

As animals are employed to convert the vegetable products of the farm into animal products of greater value, the greatest profit in fattening may reasonably be expected from liberal feeding during the period of growth, in which the organs of nutrition are capable of converting the largest amount of materials into animal tissues in a given time.

A temporary building, with fifteen pens, has been made for the purpose of continuing the experiments in pig-feeding on a larger scale. In the spring, as soon as pigs can be obtained for the purpose, it is purposed to make a trial of three distinct breeds, viz.: the Essex, the Suffolk and the Chester White.

Five pigs of each breed will be placed in separate pens, at the age of three or four weeks, and furnished with the same kind of feed throughout the experiment. An equal number of animals of each breed will likewise be kept until they are about a year old, when they will be placed in the pens for fattening, so that the return obtained for the feed consumed at different ages may be determined.

M. MILES,

Professor of Practical Agriculture in the Michigan Agricultural College.

THE FATTENING OF SHEEP IN WINTER.

By JURIAN WINNE,

OF ALBANY COUNTY, NEW YORK.

The subject before us is "The Managing and Feeding of Fat Sheep in Winter," together with the difference in the various breeds. My first rule is, always to buy good stock, whatever the breed may be, and to be sure to select animals kindly disposed to fatten. The price of well-bred sheep may appear to be high, but depend upon it, if there is no money in feeding good stock, there is no money in poor. It will not do, as has often been said, to buy any kind of sheep for feeding that you can double your money upon; for a one-dollar sheep will consume about as much feed as a six-dollar one, and as neither of them can be fed through the feeding season for much short of five dollars a head, you will readily perceive that the one-dollar sheep would stand you in six dollars, the other eleven dollars.

According to my experience, the one-dollar sheep would weigh in the spring about eighty pounds, and sell for seven cents per pound, which would make five dollars and sixty cents—a loss of forty cents, when the six-dollar one would weigh at least one hundred and twenty-five pounds, and sell for ten cents a pound, making twelve dollars and fifty cents—a profit of one dollar and fifty cents, besides getting the credit in the one case of bringing good stock to market, and in the other such as will be hooted at, and reported for you as *scallawags*. Now, as every good citizen values his reputation, (and what is a man good for without it?) I think this last item should not be lost sight of.

Next in order, then, will be the conveniences for fattening. It is bad policy, in this country, to undertake to fatten sheep in winter with no protection or shelter, save a few trees or the side of some old building. I recollect an instance of that kind of feeding, which I went to see some ten years ago, where a man had about three hundred sheep feeding, running in a four or five acre lot, without any protection, save such as I have just described. It rained a little while I was there, the ground was soft, although it was February, and his sheep, though otherwise nice good ones, looked wet, lank and muddy; his feeding troughs were in this lot, all covered with mud, and some of the feed, on account of the mud in the trough, was left. I expostulated with him about his slovenly manner of feeding. He replied that he could do no better. I said to myself, this is your first and last winter for feeding; and so it was.

My buildings, which it will be well to describe as fully as possible, were put up with as much reference to storing the products of the farm as for protecting and sheltering the sheep. The barn first in order is nearly surrounded by other buildings; it is forty-four by fifty-two feet, with twenty foot posts, with upper and lower floors—horse and cow stables and granary all below. Into this barn goes all the grain I raise, first, and then as much feeding hay as it will hold; and there was room this year for but very little.

When I thresh my grain (which I always do in the fall), I put the straw mostly back into this larger barn for feed and litter. The granary in this barn will hold about six hundred bushels of grain, and has an alley through the middle, where the corn, oil-meal, etc., is mixed for feeding the sheep. The upper and lower floors of the barn are used for hay, straw, etc., from one feeding to another. I have a wagon or carriage house close to this barn, twenty by thirty feet, with cellar the whole size, eight feet in the clear, middle and upper floors. This cellar is used exclusively for roots. The roots are generally cut by machine, and every day at half-past twelve are fed to the sheep. When I have plenty of them, we feed daily at the rate of from three to four bushels to the hundred. The middle floor of this building is used for carriages, sleighs, harness, etc., and the upper floor for grain for the sheep, and holds from fifteen to sixteen hundred bushels (not without studding the beams, however). After the feeding and watering is finished in the morning, the grain that is needed from the wagon house is brought down and mixed with oil-meal, etc., in the alley heretofore mentioned in the granary in the barn, for the next two feedings.

The next building I shall mention, which I will call shed No. 1, is twenty-one by twenty-four feet, sixteen-foot posts—on the south side of the barn. The upper part of this building is filled in summer with market hay, which is pressed out and sold in the fall, the floor covered with sawdust and leaves, and when the time arrives, forty sheep are put up and kept there until they are sold in the spring. Of all my feeding yards and stables, I always find that these second-story sheep do the best. The lower part of this building has manure piled under it in summer, as I always like to have what manure is not used in the spring under cover through the hot weather; it is taken out clean in the fall, and the shed arranged the same as the upper part, and, together with an open yard about twenty-four by sixty feet, holds sixty sheep. These sheep always have the run of this yard with the shed, except when it is stormy, and then they are closely confined to the shed.

The next in order is a small shed in rear of No. 1, about ten by twenty feet, in which stock rams are kept. The next is another low shed west of the barn, about fourteen by twenty-four feet, for breeding ewes. Both these sheds have small yards attached for good weather, are used in summer for piling manure under, are cleaned out in the fall, and receive, like No. 1, a coating of sawdust and leaves, when they are ready again for the sheep.

Next comes another shed, also west of the barn, thirty by seventy-two feet, with twenty-foot posts. The upper part of this building is also filled with market hay in summer, pressed out and sold in the fall, and the floor then covered with sawdust and leaves, the same as No. 1 and the others.

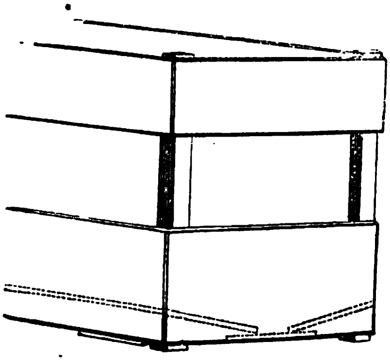
Although I say that I put in sawdust and leaves in the fall, I will correct that a little by saying that sometimes, as I have done this year, and as I always advise when practicable, I put in the sawdust before harvest on these upper floors. It then has time to get nice and dry, thereby not only preserving the floor better, but also absorbing the more liquid manure from the animals. The lower part of this building is also used for piling manure under in summer, and in the fall is treated the same as the other. Before the sheep are brought into this building in the fall, we put up, made expressly for the purpose, and put away in summer, three partitions on the upper floor and three partitions below. This gives us four pens above and four below, each eighteen by thirty feet. Each of these pens holds forty-five sheep, which makes one hundred and eighty for the upper floor, and one hundred and eighty below, or altogether for this building, three hundred and sixty sheep. On account of the lower part of this building being lower than the upper one, I have for each of these lower pens a small yard attached, about ten by eighteen feet, which, in good weather, they always get with their pens. Ventilating windows are also provided for all the pens, and are always regulated according to the weather. Two of these lower pens have two cisterns, supplied from the roof of this shed and one side of the barn, which generally, but not always, keep the sheep in this building supplied with water.

The next building is a shed, a "lead-to," on the north side of the barn, twenty by forty-four feet, used as the others for piling manure under in summer, cleaned out and treated the same as the others in the fall, and holding seventy sheep. The upper part is used for straw, corn-stalks, etc., in winter. Under this shed I have a well, which, besides its natural supply, gets what water this roof brings, together with the other side of the barn and another shed not yet mentioned. This shed has no barn.

The next and last permanent shed (although I had another temporary one I used last winter), is thirty five by thirty-six feet, eighteen foot posts. The upper part of this shed is filled in summer with feeding hay for the sheep, to be fed out in winter; twenty-one by thirty-six feet of this shed has also manure piled under in summer, used as the others in the fall, and together with an open yard about thirty-six by forty feet, holds seventy-five sheep. These seventy-five sheep, together with the yard containing sixty sheep, gets their water from a well standing between the two yards. Of this shed, fourteen by thirty-six feet, is floored and partitioned; one-half of it is used for a horse stable when needed, and into the other half I always put twenty of my best sheep.

I have now given as well as I can, a description of the buildings and arrangements I use, and although many of you may have better ones, still I must say I am very well satisfied with mine. I will now say something of feeding apparatus, and may premise that all claimed improvements in sheep feeding arrangements that have come under my observation for the last ten or twelve years, I have always examined very carefully, but have universally found after looking them over, that for fattening sheep, all things considered, they were no better than mine. For breeding sheep, however, I think there are better ones. I have a feeding box (after which I made others), sent me by my friend, William Chamberlain, Esq., the noted fine-wool sheep breeder, which for breeding sheep is all that could be desired, as we can afford to take a little more time, and have a little waste and trouble with a few nice breeders. When, however, we come to fattening five, six or eight hundred sheep, it makes quite a difference whether one man can take care of them, or whether we must have two, as an extra hand through the feeding season will cost wages and board, with us, at least one hundred and fifty dollars. Then, also, it makes quite a difference whether five hundred sheep waste a pint of grain per day, which, I am satisfied, was more than my whole flock wasted last winter, or whether they waste half a bushel per day; and I have seen more than that wasted by bad fixtures and management, thereby causing loss and discouragement to the person engaged in feeding. Also, whether we waste one hundred pounds of hay per day, or whether four or five hundred pounds will cover the waste for all winter. These wastings are what hurts, and although it looks like but a little, when you come to figure it up, you will be surprised to see what it amounts to.

My apparatus or feeding box for feeding hay, grain, roots, etc., which it took me four years to perfect, and which you are all at liberty to use if you like it, is from twelve to fourteen feet long, twenty-two inches wide, with a tight bottom; the upper sides let in by the scantling at the ends and middle, and all the box, except the bottom, put together with good stout screws. (See annexed figure and description, originally published in the Country Gentleman.) I claim for this box economy, expedition and cleanliness.



Description of the Feeding Box.—Feeding Box 12 or 14 feet long, and 22 inches wide—the bottom slanting from both sides and resting on a board in the middle, forming a complete trough for grain or roots. The bottom side boards should be 11 or 12 inches wide—then a space left of 8 or 10 inches, according to size of sheep—then the top boards, 8 inches wide—the ends and sides to match. Corner pieces of scantling in the inside, of hemlock or oak, as pine will not hold a nail or screw, the latter of which is preferable in putting them together.

The sheep cannot upset the feeder nor his basket, as he carries it on his shoulder or in his arms to the first box; he walks up perfectly straight, and scatters the feed from the basket evenly and quickly through all the boxes in the yard, the sheep falling in behind him, just as well drilled soldiers fall in line at the tap of the drum—the whole time consumed for putting grain in four of these boxes for seventy-five sheep not being more than one minute. Then, also, the space being but from eight to ten inches wide, there is no chance for the sheep to get more than their heads through, and the box being but twenty-two inches wide, there is no need for crowding or straining to reach their feed, but each animal stands quietly and comfortably until his meal is finished. Also, every experienced sheep man knows that sheep always crowd up to their feed instead of away from it; consequently, with a good feeding box, no hay or grain can be wasted.

As I said before, four of these boxes can have grain put in in one minute. Hay, straw, roots, etc., can also be put in very quickly, as the boys often take hay enough at once for two boxes, drop part in one and the balance in the other, when by a little shake with the fork it is scattered evenly through the box. The same, also, with roots, as the feeder, when he gets to the first box, can put them in so quick, that, let the sheep come as fast as they can, they cannot catch him before he is through.

These boxes have only to be turned over and back again, and they are clean. No dirt can get in from the sides, as the space between the upper and lower board is too narrow, and the box being from twenty-eight to thirty inches high no dirt can get in from the top, consequently when the box is turned over and back again it is always clean.

As to feed, water, litter, salt, etc., I must first and most particularly urge the feeder to be sure and have plenty of them, of a good quality, and to have it *right there.* It is not very good economy to depend upon your neighbors, when you buy your feed or any part of it, to bring it to you from day to day, but you should always have at least two weeks or more feed on hand, when you will be all right, come fair weather or foul. I have seen a case of that kind, where a lot of fat sheep were obliged to go without their grain for a whole day, on account of a disappointment, which could not be made good again in three days' feeding. Water, too, should be looked after regularly. I have a rule that the boys shall go around and fill up the troughs with water twice in the morning after feeding, and twice in the afternoon, always commencing everything in the shape of feed, water, salt, etc., with No. 1, and always ending with the last yard or stable.

Littering cannot, under any circumstances, be neglected. I have often stood in the yard or stable, and noticed when the bedding was becoming wet or dirty, how careful the sheep were to keep out of it, and how reluctantly they would lie down. As soon as they got a nice clean bedding they would drop down upon it, and lie there as contented and happy, to all appearances, as an exhausted and worn-out person would on a bed of down; and here I shall take the liberty to say that, in my humble opinion, this is the time, and the only time, they accumulate flesh. Salt, ashes, etc., should also never be forgotten; no, not for a single day.

Quietness, also, is of the greatest importance, and, in order to secure it, I have a rule never to allow strangers in the yard unless accompanied by the feeder. The sight of a stranger in the yard will send the sheep pell-mell in every direction, and the effect will be perceived for a whole day afterward; and no other reason can I assign for the forty sheep in the upper part of shed No. 1 doing better than the rest but that we never go there except to feed, water, litter, etc., and there is no passing or repassing through them as through the other pens.

The question is frequently asked, "What kind of grain is best for fattening sheep?" I answer, for me corn is the best for the main feed, although I like a few oats mixed to start with, and have no objections to beans, peas and oil-meal, if they do not cost too much. Whenever they cost as much, or more than corn, I dispense with them, as a sheep feeder must count his cost as well as his reputation, if he intends to succeed. Another question arises: "Do you find whole or ground feed best?" For horses, cattle and pigs I prefer ground feed, but for sheep, especially fattening sheep, I choose whole or unground feed. I find that the sheep will grind it just as well as the mill, to which we must give every tenth bushel, besides having the trouble of hauling the grain to and from it. I also find that fat sheep will hold up to their full feed much better, especially in soft weather, on whole than on ground feed; consequently, drawing grain to and from the mill, and paying toll, is, in my estimation, labor and money lost.

A person to succeed in sheep feeding must do it because he likes to do it—because he prefers to feed sheep, and see them eat, to any other business done in winter; and, although he may not be able or willing to do the work himself, still he must take delight in seeing it well attended to if he expects to prosper. He should be sure to see every sheep he has at least once a day, when, if he understands his business, he can tell at a glance whether they have been properly cared for.

It is asked, "What kind of hay is best for sheep?" Emphatically I say clover, but it should be cut early and cured nice and green. Timothy is probably best for horses, but for cattle and sheep I prefer clover, and would rather have a ton of nice green fine clover than a ton of timothy, although in market one ton of timothy will bring as much as two of clover. I have sometimes fed some timothy hay to my sheep, but always found that it was not the kind for them—they would grow lank and thin upon it—not a very good sign that a fattening animal is thriving well. As soon as they got the clover again they would plump up and look full and nice, and I can assure you unless your sheep look full and plump, they are not fattening very fast.

Is straw good for feeding sheep? One feed at noon of nice, bright, oat barley or pea straw, I prefer to hay, as they not only relish it, but it is a change for them. Sheep are very fond of variety, and will eat daisies, weeds, thistles or almost anything of the kind that is cut and cured green. Nice green corn-stalks are not very bad for sheep, and when I have plenty of them I always feed the sheep with them, at least once a day, and consider them as good as hay. I prefer, however, feeding them the fore part of the winter, as towards spring they will sometimes contract dampness, and then the sheep do not eat them so well.

I am asked to answer this question: "Shall we cultivate roots for fattening sheep, and what is their value compared with grain?" I have often thought I would experiment a little on this subject, but as the trial is attended with considerable pains and trouble to have it accurate, without which it is of no use, I have put it off from winter to winter, and now have no figures to give. I intend yet to test this question thoroughly. However, I will answer as well as I can, and as I have used more or less roots every year since I commenced feeding sheep, I think I have a pretty good idea about them. I will say then, cultivate roots by all means, if you have plenty of manure and intend to put your land in proper condition; if not, you may better leave it alone, as you will surely get more grass and weeds than roots. I was successful in raising about eighteen hundred bushels of flat turnips last season on about two and a half acres of land, and with very little labor. Early in the spring we covered the ground with about fifty loads of manure from one of the sheep sheds, and plowed it in about seven inches deep. Just before the time arrived to put in ruta baga seed, the ground was harrowed, another light dressing of fine manure put on and worked in with a gang-plow about three inches deep. It was then well harrowed, and the seed immediately sown. The seed proving bad, I gang-plowed the land again and sowed new seed.

This time the seed became beautifully, but was soon destroyed by the turnip fly, when, as a last resort, I gang-plowed it again, sowed the common purple-top turnip, and had the result stated. On account of the frequent gang-plowing by which the weeds were destroyed, we had no trouble but to thin out the plants. Part of the seed was put in with a large seed planter, and part sowed broadcast, and in thinning the plants where the seed was put in with the planter, the work could be done in one half the time that was required where the seed was sown broadcast.

With regard to the value of roots for feeding, my experience is that whenever they are worth, at home, more than seventy-five cents per barrel, and corn not over from one dollar to one dollar and twenty-five cents per bushel, the corn is the cheapest, and I would use only a few roots as a substitute for green food. I consider carrots and ruta bagas better than common turnips; still by feeding a little more of the latter than the former, I think the sheep do just as well on them.

Another inquiry is, "How often do you clean out your yards and stables in winter?" Not at all, unless I perceive danger to the buildings from the weight of the sheep and manure on these upper floors; then we remove a quantity sufficient to make the building safe, and leave all the rest until the sheep are sold, when we find the manure so hard and solid that it must often be cut with an ax or hay-knife into blocks before it can be handled—thus showing that no decomposition has taken place during the feeding season.

Feeding with me always commenced about half-past five in the morning, when I always endeavor to be there and see that everything is right, and give special orders, if necessary, for the day. The best help will sometimes put off for to-morrow what should be done to-day, and this is worse in stock feeding than in any other business.

I hold that the noses of the sheep should be smeared with tar, at least four times through the feeding season; first, when they are brought home in the fall; second, when they go into their winter quarters, and then twice during the winter. By doing this, we prevent all trouble with colds and foul noses. The old method of catching and holding the sheep to perform this operation made it a laborious task, and I now practice a new and easier way of doing it. We simply take two or three of the sheep boxes which I have already described, which are loose and can be set anywhere, and make a small yard under the shed, and drive the sheep in and pack them closely; one man holds the bucket of tar, and two or three, each with a wooden tar ladle, jump right in among the sheep, and without catching or holding the sheep, put the tar on, commencing at one end and coming out at the other; and this job, for six or eight hundred sheep that used the old way to take us almost all day, can now be done in less than two hours, besides being so much less injurious to the sheep.

When I went into the sheep-feeding business years ago, it was more with a view to the consequent improvement of the land (it would hardly grow a good crop of beans then), than to make the ready dollar. In this I have fully succeeded. I wanted to make two spears of grass grow where but one grew before, and I am sure I am getting three, some of my neighbors say four; however, I call it three. The meadows that used to cut from one-half to one ton of hay per acre, now yield on an average over two. Raising rye was then out of the question; last year I got from about sixteen acres, four hundred bushels of rye, and straw enough to have amounted to near nine hundred dollars, if I had sold it, (which I never do, unless I replace it by hay for bedding, as I have done this year, getting three tons of hay for one ton of straw). This year I got from forty-five bushels sowing, fifty loads.

For fear of misleading you, I must say, that with all the experience and precaution in buying, good fixtures, plenty of feed, litter, care, etc., you will not always succeed. For though I have for the last twelve years studied the thing closely, and carried it out carefully, in spite of all my efforts I have not always made money, and would almost guarantee that out of every ten new sheep feeders, eight will probably feed but one year. When a friend asks my advice on the subject, I always say to him, try twenty-five or fifty, and then if you like it, get more the next year. Some have looked upon this advice as selfish, and given to keep others out, and have rushed into the business, and not only the first year made no money, but actually lost nearly half their investment. We used to have several sheep feeders in this and adjoining counties, and as the principal feeders have all left the business except myself, I think this is pretty conclusive evidence that what I now say is about right.

In regard to the profit of the different breeds of sheep for fattening, allow me to say that in my twelve years' experience in feeding, I have found the breed of sheep to have much to do with their early maturity, weight and fattening qualities. I have had Liecesters and their grades, Cotswold grades, Southdown grades, Merinos and their grades, and have always found that whenever Leicester blood predominated, I had an animal that would fatten quick at an early age, and make good weight, and have had no trouble when the animal has been half or more of Leicester blood, with good keeping, to make him dress one hundred pounds of mutton at twenty months old.

I have lately been informed by a western New York gentlemen, that I am represented among fine wooled sheep men as having changed my views on the question of feeding coarse or fine wooled sheep, and that I am now in favor of fine wools. I think my experiment of last winter on this point, printed in the *Country Gentleman* of April 30th, 1868, would satisfy any one to the contrary. Nevertheless, having found it impossible to get coarse-wooled wethers enough for feeding the present winter, I am again fattening a number of fine wools—but not from choice. Among the latter is one with a ring in his horn, which, as I was told by the man from whom I got him, was once sold for three hundred dollars. I was glad to get rid of him, although he was fat, for five dollars and fifty cents; and, as to fine-wools generally, I am fully convinced they will not make me more than half the money for winter feeding that the coarse-wools will.

SWEET POTATO CULTURE.

BY W. W. RATHBONE, MARIETTA, OHIO.

VARIETIES.

The first question for consideration, when one designs planting a crop, is that of seed variety to be used. A page might be written describing the Kentucky Red, Bermuda Red, Mississippi Red, Red Yam Hatchee of Mississippi, Jersey Red, Jersey Yellow or Yellow Nansemond, and the page would be finished by giving the Yellow Nansemond the preference above all others. This is the opinion, not alone of the writer, but of all whose experience is worth noting. The Red Nansemond is equally good with the Yellow. But people are justly prejudiced against red potatoes.

NANSEMOND SWEET POTATO.

I esteem the Yellow Nansemond on account of its robust habit, its earliness, and especially over all red varieties from the fact that *ripeness* can be decided early in the season by the golden hue of the skin. If our city friends, who so often purchase unripe, and, therefore, unpalatable, so-called *sweet* potatoes, early in the autumn, will refuse to buy all white looking ones as unripe, and keep the fact in mind that those of rich golden color only are *sweet*, they may enjoy early in the season one of the luxuries of the market, as yet grown in quantities far too limited in many parts of our State. The Hatchee, the best Yam that does well with us, has recently appeared at South Pass, Illinois, under a new name, viz: Brazilian White. We rejected this variety twenty years ago as unworthy of cultivation, compared with the Yellow Nansemond.

IMPROVEMENT OF SEED.

When the fact is considered that the very smallest of the immature strings of potatoes have been saved for propagating this crop for centuries past, is it not wonderful that it has produced so well? This practice obtained from the fact that large potatoes in former days could not be kept over winter. It was found, by the imperfect modes of keeping, only the smallest tubers would come out sound, or even half sound. There was, therefore, excuse for using such seed. But not so in this day of progress. Now, by better information, acquired by long experience, and houses built and heated to a certain temperature for this specific purpose, I preserve the product of fifteen acres, the *very largest* as well as the smallest, in the most perfect condition. For a long term of years I have been planting my crop from plants from the largest sized tubers. The desired improvement is manifest.

SPROUTING THE POTATOES.

The sweet potato being a tropical plant, makes it necessary to prolong its season by means of the hot bed. This should be of the simplest and cheapest form, and advances the crop five or six weeks. No other plan than sprouting and setting plants will answer; even in the tropics, if pieces of potatoes were planted, too many plants would be produced per hill, and, as the result, a great mass of small potatoes.

DIRECTIONS FOR SPROUTING SWEET POTATOES.

In February and March litter the horse and sheep stables abundantly with saw-dust, forest leaves, grain chaff, straw, and, as a last resort, corn-stalks, in order to retain the urine, and make a supply of fresh manure. Buy a load of each neighbor, to be paid for in plants. Spread this manure to keep it from heating till wanted. Spread in sheds, if you can; otherwise, out-doors. Near water, choose a warm spot—a side-hill—facing south or southeast. Dig a pit one foot deep, 7½ feet wide, and four feet in length, for every bushel to be sprouted. This pit must be drained. The seed potatoes, on arrival, must be kept in a warm, dry room, free from wind. The 20th of March haul the manure to the spot. To every load of manure use one of saw-dust, or leaves, or spent tan-bark, or chaff. Mix the materials thoroughly in a ridge five feet high. If too dry, moisten with hot water. The heap should be as moist as the droppings fresh from the horse. In a week, if not hot, shake it over, piling up again, and, mark it, if it won't heat in the ridge, it won't in the pit. In handling hot bed manure, always do it with a twist of the fork. It cannot be shaken too much; never is enough. I twist it into the wagon at the stable, twist it out at the ridge, and twist it into the bed. Horse manure is the best, sheep next; that from cows will not heat. Collect enough material to form a bed 20 inches deep. After the mass is hot, shake it into the pit, settling with the fork; if necessary to step upon the bed use a board six feet long and a foot wide to step upon. Side up, using the wider boards at the north, giving the covering pitch enough to shed water. Two inches of mellow dirt may be spread over the bed, and the boards set on it. Fasten up with broad stakes driven into the manure where the ends of boards meet.

The best covering—cheapest, all things considered—is strong 4-4 brown sheetings, even at 25 cents per yard. Sew two widths together—this gives a covering six feet wide. The side-boards must be put up to suit. Use two inches wide strips every four feet, as rafters, to support the cloth, and nail at the ends to steady the side-boards. The cloth is fastened by tape loops every two feet to barrel nails on upper outside of boards. These covers are quickly put on and off, and by care not to have them unnecessarily wet, and always put away dry, will last eight or ten years, and are in the end cheaper than boards. Glass is too expensive, and makes plants too tender.

Put on two inches more dirt, making four inches to be beneath the potatoes. Now, get very mellow soil from the woods, if you can—that around rotten logs is the best—enough to cover the bed three inches more. Cover the bed, and let stand with seven inches dirt on for eight or ten days, until the violent heat has passed away. Most failures come from over-heating, some from too much wet, some from cold. When all is right plants will be ready to set in four weeks from day of bedding. Dig a ditch around the bed to keep all water out of the pit. With beginners "haste makes waste." Say the manure was gathered 20th March. Bed the potatoes 10th April, or later. The whole amount of dirt was put on bed to have it warmed. Now, remove three inches in depth at one end to begin laying potatoes. Choose a warm day, with sunshine best. If all is well, if you are experienced, cut the largest potatoes in quarters lengthwise. Lay the cut side down, six inches from board—alternating cut and uncut. Cut potatoes make more and better plants per bushel, but require more experience to keep from rotting. Lay the top or eye end of potato up hill. Place them one-half inch or more apart. After laying a bushel, take the unmoved three inches of soil, and lay on the potatoes, keeping the first moved soil to finish with. This will leave the bed with four inches below, and three inches warm earth over the potatoes. Soil direct from the earth in April will so chill potatoes as to rot them. Let the beginner remember this. From the first cover the bed to keep off rain. In ten days after bedding the plants will be lifting the soil as a mole. With the fingers shake the earth amongst the stems, and this will be the chief weeding. Use tepid water from a water-pot at evening when needed. Keep off cold rains. Expose to sun, and keep off covers when frost is not anticipated, in order to toughen the plants. When the plants are three inches high, with good rootlets, they are ready to draw. Take only the dark green and sound-leaved ones. The potato roots at the lower end whilst sprouting, and should he held down firmly with the index finger of the left hand, whilst the right clasps eight, ten, or more closely standing plants, neither bruising or bending abruptly; move the hand to describe a circle; draw gently; the plants will come forth with the fibres on. Poor hands leave half the fibres in the bed. Plants fully formed, just pushing through the ground, and an inch in length, may be seen at one time on the potatoes. Great care is needed, when drawing, not to injure the undeveloped plants. The plants that come later, from the middle and lower end of the potato, are generally best. A succession of crops of plants, as first and second only, is erroneous. I can go over a bed every day and take good plants, and by adding a little soil improve the condition of the bed. After the pulling begins give copious supplies of water after every drawing.

Plants, to be sent to a distance, should be packed in wet moss; be pulled when the leaves and stems are dry, and have the roots puddled. After plants are packed no water should be poured amongst the stems.

SOIL AND ITS PREPARATION.

The idea prevails that sandy soil only answers for this crop, and this erroneous opinion deters many, who are not the possessors of such soil, from making a trial of sweet potato growing. I have found the Nansemond to succeed on nearly every variety of soil, provided merely that the surface water could be easily and rapidly passed from it. It will not thrive in a wet soil of any description. Although I grow the Nansemond very largely, it being my special and only crop, I have not a rod of sandy land. The late John W. Tenbrook, the largest grower in Indiana, had a still heavier soil, and yet found it a very profitable field crop.

The white, chalky, chocolate, and especially the yellow soils of Ohio, Pennsylvania and Indiana, are adapted to this crop. The alluvial and peaty soils are not. It is better suited with the poorer class of soils; is less exhausting than any known crop. It has been produced for fifteen successive years on the same plot of land, showing no diminution of yield. My fields, without the addition of manure, are growing rich from the annual burying of the vines of the crop, plowed under as a green manure whilst digging the crop. I cut the vines on one side of the row, which is upset with two horses and plow.

Rolling land is desirable for the crop, so arranging the rows that the rains will pass off quickly.

After long experience in cultivating this crop on hill sides, I most emphatically dissent from writers who recommend the making of rows of any crop parallel with the course of the hill. It is impossible to dam our summer showers, and when the pools do break over, the washing is far more disastrous than by my plan, where each little ditch carries the small amount of water falling within its valley. Some washing will occur, but many small streams do not do the damage of a few large ones.

The field should be plowed early in April, and afterward cultivated or harrowed, to keep down weeds, until the 10th or 15th of May, by which time the plants should be large enough to set.

HILLS, OR RIDGES.

By cultivating in ridges and setting the plants every eighteen inches, more bushels per acre can undoubtedly be obtained than by planting in hills. On the other hand, more bushels of large tubers can probably be produced by hills. By hilling, the crop ripens better, as the sunshine has access to more surface, and for early marketing the crop can be more easily grabbled. If this process is followed by cutting the potato loose before pulling it is of decided advantage to those remaining in the hill. I have thus passed over a crop three times between the 15th of August and 20th of September, and at the final digging have taken out large potatoes that were small on the 20th of September.

FORMING THE RIDGES.

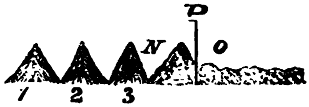
For twelve years I followed the mode we inherited, of throwing *two* furrows together (I have known persons to throw *four* furrows) to form the ridge, by using two horses. It was killing work, and made crooked rows—something that worries all farmers of good taste.

A NEW PLAN.

Ten years ago I devised the plan described below. It has the following advantages: 1st, It is easy work. 2d, The rows can be made as straight as by a one-horse and marking-out plow. 3d, I can place twenty-five per cent. more rows per acre. 4th, Experienced cultivators know that narrow rows give the best product in quality, and quantity per row.

I have seen crops of sweet potatoes condemned from the start, by immense masses of earth, the very weight of which will prevent the growth of the tubers and accelerate that of the vines.

With two horses and plow throwing a furrow slice to the right hand, begin to ridge on the left hand side of the field, throwing a furrow as the team passes *down the hill.* Return to place of beginning without plowing. Now set the clevis off the beam to the extreme left, to be held there by clevis pin or an inch board strapped to the beam. The near horse will now pass down hill in the furrow first made, the off horse on the land to be ridged. The plow is held off to the right, at an angle of forty-five degrees, leaving a ridge as you go. Pass up hill with the near horse in the last furrow made, dressing up the crooked places and leaving a ridge as sharp as the roof of a house. In the diagram, 1, 2, 3 show finished ridges; N, the position of the near horse; O, that of the off one; the line at P, the position of the land side of plow in passing down hill to block out the fourth ridge. Made in this manner, the ridges should be two feet two inches from center to center.



MODE OF RIDGING.

SETTING THE PLANTS.

Now, whilst the earth is freshly turned, a marker, with arms every eighteen inches, having fans similar to a reaping machine, is pushed over two rows at once. If culture in hills is intended, every alternate mark will be left unplanted. Boys now follow with baskets of plants prepared by puddling, dropping only one for each hill; others follow quickly, and set the plants down to the leaves, covering a great part of the stems. Plants do best set deeply—1st, because it protects the stems from the sun; 2d, if cut-worms work on them by taking earth away, they will sprout at the foot of every leaf stalk.

I have abandoned the old method of watering when setting, except in extreme dry weather. By my present mode, the crop can be set very rapidly. In 1868 ten boys set for me 150,000 plants in six days of nine hours each, working all day in the sunshine as fast as the team could ridge, and not two plants in one hundred died.

AFTER CULTIVATION.

In ten days after planting, set the shovel plow to work. It almost hoes each side of two ridges by once passing through. Kill the weeds now before you can see them. It is the most economical mode of cultivation. If a rain occurs soon after planting, hands should go over the crop, clasping, raising, and pressing the earth with the hands about the plant. At the first hoeing, *cut between the plants to form the hills.* Be careful, in hoeing, not to cut deep. The earlier potatoes creep along just beneath the surface. Plow often, and as long as the vines will permit. Turn the vines out of the way, and if they land upside down, all the better. Never cut off the vines. I have experimented on this point, and proven that it is positively injurious.

HARVESTING THE CROP.

About the period that frosts are anticipated, the crop should be dug. I do this very rapidly with the plow. The crop is much easier dug than the Irish potato, owing to the form of the hills, color and length of the tubers.

A frost that merely blackens the leaves, does not injure the potatoes. But beware of one hard enough to freeze the vines. When dug, the potatoes should be carefully handled and stored away in boxes or barrels in alternate layers of leaves or cut straw, for preservation.

The sweet potato is one of the crops that pays well as a market crop. There are numerous towns in Ohio too poorly supplied. It is a crop that never fails on dry or land well surface-drained. In very dry seasons, when other crops are cut short, we get the best crop, and of course high prices. In conclusion, we recapitulate: Set strong plants, of the Yellow Nansemond variety, on moderately fertile rolling land, on high ridges or hills, with good surface drainage; keep clean, and success is certain.

TEXAS CATTLE DISEASE COMMISSION.

Report of N. S. Townshend and D. McMillan, Members of the Ohio State Board of Agriculture, to James Fullington, President Ohio State Board of Agriculture.

Called to the duty of serving as Commissioners from the State of Ohio in the American Convention of Cattle Commissioners, recently held in the city of Springfield, Illinois, we submit most respectfully the following report:

THE CONVENTION.

A proposition for a Convention of Commissioners appointed to represent the interests of cattle growing and cattle consuming States in regard to the terrible pestilence communicated by transportation of cattle from some of these States, was forwarded by Governor Fenton, of New York, to the Executive of all the States interested. This proposition was promptly acted upon and Commissioners were appointed from Illinois, Indiana, Wisconsin, Michigan, Missouri, Kansas, Iowa, Ohio, Pennsylvania, New York, Rhode Island, Massachusetts, and the Province of Ontario. Governor Oglesby, of Illinois, extended an invitation to these Commissioners to assemble at Springfield, in the Hall of the House of Representatives, on the 1st of December, 1868, and the Convention was held accordingly.

HISTORY OF THE TEXAS FEVER.

As early as 1849 a disease was noticed among cattle on the western borders of Missouri, which was attributed to a contagion spread from droves of Texan cattle which about that time began to be brought into the State. For several years the importation of these cattle into Missouri and Kansas steadily increased, while the disease referred to prevailed only in some seasons. In 1858 this cattle trade was greatly extended and the cattle disease increased in proportion. So serious was the evil, and so manifestly did it depend on a contagion spread from imported cattle, that, in 1861, the Legislature of Kansas attempted to stay its ravages by restrictive enactments. The importation of cattle was interrupted during the war of the rebellion, but promptly resumed after its close, and with this resumption there was a return of the disease among the native cattle of Kansas and Missouri. This was followed by protective Legislation in Missouri, and additional restrictions upon the trade in Kansas.

The past season Texas cattle have been still more largely imported, immense stock yards have been opened at Abilene, on the Union Pacific Railroad, in Kansas, from which upwards of two thousand car loads of cattle have been carried to the grazing States, or to the eastern market. Another route was opened by New Orleans, and up the Mississippi river by steamboat, and still another by land to the mouth of the Red river, and thence up the Mississippi. By these routes not less than 100,000 head of Texas cattle have been brought into the State of Illinois, the present season. With this influx of cattle from Texas the Texas fever appeared with great violence in the States of Illinois, Indiana and Ohio in the months of June and July, and was soon heard of in other States both east and west. The loss to stockholders became ruinous in the extreme, and excitement widely prevailed. In the town of Tolono, on the Illinois Central Railroad, 776 head of native cattle have died since June; in the single county of Champaign, Illinois, there was a loss of 7,000 head, and in the 5th ward of the city of Chicago, the death of cows by this disease amounted to nearly 700. In some herds the loss exceeded 90 per cent., while others were wholly swept off by the pestilence.

SYMPTOMS OF THE DISEASE.

One of the most marked symptoms of Texas fever is a greatly accelerated pulse, from 40 beats in a minute, which may be taken as the average for healthy oxen and cows, in this disease it sometimes rises as high as 120 beats in a minute. Another symptom usually present is a decided increase of the temperature of the animal after the fever is fully developed, but this is generally preceded during the formative stage by a chill. The excretions from the intestines and bladder are diminished in quantity and usually high colored or bloody; the secretion of milk is nearly suspended. A yellow mucous is discharged from the mouth and nostrils; the animal has a dejected look, hollow flank, an arched back, an unsteady gait, and a rough coat. Many of these symptoms are also common to other cattle diseases. It may be presumed, therefore, that the most expert veterinarian would hesitate to pronounce a case one of Texas fever without taking into account all the attending circumstances.

EXAMINATION AFTER DEATH.

This presents no evidence of disease of the lungs or air passages, but little that is unnatural can be found in the first three stomachs; the fourth usually shows congestion, and the intestines are still more engorged and blood stained. The liver is not often materially affected, but the gall bladder is almost always filled with dark colored and thickened bile. The spleen is *always* enlarged; in health it weighs in mature animals from one pound to a pound and a half; while in cattle that die of Texas fever it sometimes weighs as much as eight pounds. The kidneys are congested and their secretion in the bladder is bloody or blood stained.

CONTAGION.

The contagious character of the disease is supposed to be established by the following evidence: There is no such disease known in any part of the country through which Texas cattle have not passed, and whenever the disease has appeared among native cattle it is only among such as have pastured upon lands previously grazed or traveled over by Texas cattle, or that have used water running from a field in which Texas cattle were kept or watered.

The disease does not appear to be communicated through the atmosphere alone, but only when cattle come in contact with, and can take up with their food or drink the excretions of Texas cattle. When Texas cattle have been brought from their homes during the winter months there is no evidence that the fever has followed in their trail, but when they arrive in the northern States as late as June or July, the native cattle of these States that are exposed, die almost universally. Doubt of the contagious nature of this disease or of the contagion originating with Texas cattle has existed in some minds, because it is an admitted fact that some of the cattle which have been supposed to communicate the disease, have no manifestations of it themselves. "Can cattle communicate a disease without having it?" is urged as though it were a question impossible to answer in the affirmative. To this it may be replied that the history of some of the diseases affecting the human subject afford cases precisely analogous. Prisoners confined in ill-ventilated dungeons before the days of prison reform, have often given typhus fever to a whole court at the time of trial, while the prisoners themselves had been steeped so gradually in the poisonous atmosphere that their system had become accommodated to it, and hence they have escaped altogether, although the poisonous exhalations from their bodies have spread death all around. A person protected by vaccination from small-pox may have that modified and trifling form of disease known as varioloid, but such a person may communicate fatal small-pox to another person not protected by vaccination. It may therefore be presumed that Texas cattle have come so gradually under the influence of the cause of the mischief or have in some way become comparatively insusceptible to its action so that they escape the deadly form of the malady, and yet can transmit its seeds to more susceptible animals. Others have hesitated to admit the contagiousness of the disease, because the attack does not appear in some cases until a long time after the exposure. This, however, presents no difficulty to persons familiar with the history of other contagious diseases. Many of them require a period sometimes definite, sometimes indefinite, after the exposure, for the *incubation* of the disease. This period varies greatly, and in Texas fever it may extend to forty days, or even more.

CAUSE OF THE DISEASE.

The above recital of symptoms, post mortem appearances, and evidence of the contagious character of the Texas fever, the disease must still be regarded as unsatisfactory, without additional light on the true cause and source of the mischief. Happily for us the microscope has done in this case what it has done in so many others, it has brought to view and made us acquainted with very potential agencies which are altogether invisible to the unassisted eye. Dr. M. Morris, of New York, one of the board of health of that city, read to the convention an exceedingly interesting paper, giving the results of examinations with the microscope of both solids and fluids of hundreds of animals that had died or had been killed while laboring under Texas fever. These investigations disclose the fact that the fluids of animals affected with this disease, the urine, the blood, and more especially the bile are infested and practically destroyed by the spores of a minute cryptogam or fungous plant. These spores which take the place of seeds in more highly organized plants are multiplied by a simple process which admits of unlimited continuation and almost inconceivable rapidity. They have the form and organization of simple cells, each cell or spore under favorable circumstances would produce the little plant known to microscopists as *Tillesia caries*, the plant in turn would produce other spores, but under different conditions, as for example, when immersed in animal fluids the spore does not produce a plant, but multiplies itself after the manner of simple cells. Each spore contracts at the center, then divides, and either end has at once the power and activity of its parent, and the process of multiplication by what is called fission, goes on indefinitely, or so long as the fluid in which it is immersed has fresh organic matter to sustain the life of new cells or spores. Paintings of this cryptogram magnified were exhibited to the convention. It was said to be found abundantly in the blood and bile of every animal that died of the fever or that was killed while suffering from its effects. Cattle of the northern States, while unaffected by Texas fever, have no such cryptogamous parasites in their fluids, but the same parasite was to be found invariably in Texas cattle, although regarded as healthy. It was also stated that this or allied fungous growths had been observed growing parasitically upon the grasses native to Texas, so that it might readily pass into the bodies of animals with their food. While the vigor of the animals is maintained at a natural standard the growth of the parasite is restrained, but when the animal is subjected to hard driving and scarcity of food and water, all of which diminish his vitality, then the pârasite has less and less to overcome, until all the nutritious and recumentitious fluids are destroyed or vitiated. That the animal, while allowed to remain in circumstances where his vital force is unimpaired, should be able to resist the injurious influence of the parasite, but should succumb to its attack when debilitated by hard usage is in correspondence with innumerable facts in the history of other diseases. To some in the Springfield convention it seemed incredible that a minute, and to the unassisted eye invisible organism could, by any possibility, destroy the life of an animal as strong and as large as the ox; the same doubt will probably be suggested to the mind of many who will read reports of the proceedings. It should be borne in mind, however, that what are called the lower forms of life, such as cryptogamia and protozoa, rank lower than other organisms only in regard to some of the manifestations of vitality, their reproductive force is vastly greater than that of more perfect beings. The structure of the cryptogam being very simple, it is almost limited in its functions to the one end of reproduction, and this is carried on with singular energy. Its attack, therefore, is not from without but from within. The nutritious fluids of the animal are assailed, and all appropriated to the uses of the little parasite until the animal that harbors its myriads must ultimately die of starvation, if death, in more violent form, does not sooner occur.

Comparatively recent discoveries claim to have established; that all epiphytic and epizootic diseases, as well as all contagious epidemics, and many of the endemic diseases to which humanity is liable, are of cryptogamic or protozoic origin. The oidium that has almost destroyed the grape crop of Europe, the potato rot, cholera, small pox, measles and intermittent fever are notable examples said to depend on such causes. Whether these claims be all admitted or not, they open a most interesting field of inquiry for patient and truth loving investigators.

It may perhaps be some relief to timid persons to learn that no facts were presented to the Convention by the health officers of New York or Chicago, showing that Texas fever or any other sickness was given to persons who unwittingly used the flesh or milk of animals affected with this disease. Whatever entozoon should conceal himself in our food, so long as that food is properly cooked there is no probability that it can do mischief to the human subject.

TREATMENT.

Carbolic or phenic acid, the product of the distillation of coal tar, is one of the most powerful antiseptics known. It is especially inimical to the lower forms of vegetable and animal life; a solution so dilute as to contain not more than a half per cent. of the acid being sufficient to destroy such organisms almost instantly. It cannot be administered to any animal in large quantity, but it has been supposed that it might be administered and taken into the circulation in quantity sufficient to destroy the parasites without materially injuring the health of the animal. The result of the experiment appears to have been in some instances what was desired, and persons have become quite sanguine of the success of this treatment. It is perhaps safer to say that the result is sufficiently favorable to warrant further trial; but the facts thus far observed do not justify us in regarding the carbolic acid or anything else as a specific.

PREVENTION.

This disease affords a marked example of the soundness of the old proverb, that "an ounce of prevention is better than a pound of cure." The Texas fever can be effectually kept from any locality only by keeping out the cattle by which it is introduced. There is no disinfectant known that can be absolutely relied on to prevent the communication of the disease. The convention, with entire unanimity, recommended to the Legislatures of all States liable to be visited by Texas cattle, to pass stringent laws prohibiting their importation or transportation during the summer months. The recommendation of the convention relative to this subject is in the following terms:

WHEREAS, A malignant disease among cattle, known as Texas fever, has been widely disseminated by the transit of south-western cattle through the Western and North-western States during the warm season of the year, occasioning great loss to our farmers, and possibly endangering the health of our citizens; therefore,

Resolved, That this convention earnestly recommend the enactment by those States of stringent laws to prevent the transit through their limits of Texas or Cherokee cattle, from the first day of March to the first day of November, inclusive.

Resolved, That the interests of the community require the enactment of laws making any person responsible for all damages that may result from the diffusion of any disease from animals in his ownership or possession.

In addition to these resolutions, the following draft or sketch of a bill was adopted and recommended to such States in the east or on the principal routes of transportation as might require its provisions:

ARTICLE 1.

1. Provides for the appointment of three commissioners, or such other number as may be necessary, by competent authority, to hold their office for five years, and report annually to the Legislature.

2. Such commissioners shall have power to watch over the general welfare of animals within the State for which they are appointed, and particularly to prevent the spread of dangerous diseases among them, and to protect the people of the State from the dangers arising from the consumption of diseased meat.

3. They may from time to time appoint such assistant commissioners to aid them in the discharge of their duties, as the public good may require.

4. They should have power to administer oaths, and to prescribe from time to time such rules and regulations as may be necessary to accomplish the objects of their appointment.

5. They shall give public notice of the outbreak of any dangerous disease, and such practical directions for its avoidance as they may deem necessary.

6. They may either place such diseased cattle in quarantine or cause them to be killed, as may seem necessary for the public protection; but in the latter case they shall cause an appraisal of such cattle to be made, and the county or State shall pay such proportion of the appraised value as may be provided by law.

ARTICLE 2.

1. The commissioners, or any assistant commissioner, located on the frontier of any State, shall have power, at such times as may be prescribed by the commissioners, to inspect all the animals brought into such State, whether by railroad cars, vessels or common roads, and shall have power to detain such railroad cars, vessels and drovers of animals on common roads, long enough to make a proper investigation of them, for the purpose of ascertaining their sanitary condition.

2. No animal shall be permitted to enter the State which shall be deemed by such assistant commissioner to be capable of diffusing dangerous diseases, or of injuring the health of the inhabitants.

3. No train shall be allowed to proceed unless the animals contained therein have been supplied with food, water and rest within twenty-four hours next preceding the time of such inspection.

4. All animals shall rest and have access to food and water for twenty-four hours after having traveled a similar period.

5. The railroad companies shall provide suitable yards for feeding, watering and resting the animals traveling on the trains, and for quaran-

tine purposes, which shall be kept cleanly and in wholesome condition, to the satisfaction of the commissioners.

6. Each train, on leaving its point of departure, shall have certificates, signed by an assistant commissioner, which shall certify that all the animals therein contained were in a healthy condition at the time of its departure, and also the exact time of leaving; and such certificates and endorsements thereon of the time of resting and time of departure of the train at subsequent resting and feeding places, shall be exhibited to the proper authorities whenever required.

7. Proper penalties should be inserted to prevent the bribery of officers charged with the execution of these provisions.

8. Proper penalties should also be provided for those who interfere with or resist the officers charged with the execution of these duties.

WANT OF VETERINARY KNOWLEDGE.

The consternation which spread over the State of Illinois and other States on the outbreak of the Texas fever, and the multitude of wild notions and theories in regard to it which were afloat, afforded striking evidence of the lack of correct veterinary knowledge among farmers, and equally of the lack of a class of well-educated veterinary practitioners. The latter want is greatly felt all over the country, and unfortunately it is a want that cannot immediately be supplied. If the agricultural colleges now being established in several States shall give adequate attention to this important department of science, the deficiency may in time be supplied. But can not something be done to meet the immediate demand? We would respectfully inquire why the thousands of well-educated medical practitioners within the State of Ohio cannot make a study of the diseases of our domestic animals, and thus have it in their power to confer additional benefits upon the community. There is no class of men who give more earnest thought, or sacrifice more of their personal comfort to the good of others, than physicians; and we believe they would require no other prompting to make the necessary preparation than the conviction that such a step would add to their usefulness. Already some of them have the requisite knowledge, and all have a well laid foundation upon which this specialty may be based. Some of the diseases of our domestic animals are occasionally communicated to the human subject, either fatally or beneficially, such as Rabies and Variola vaccina. These are necessarily understood by physicians. Many other diseases of animals may be communicated to man, and therefore ought to be understood; others are common to the human subject and to animals, though not intercommunicable—these can be readily understood; and some diseases of animals, although peculiar to them, yet the pecuniary and other interests involved make these worthy to be understood, at least much better than they are at present. Many operations have to be made upon animals, that require, although they do not always secure, the skill and dexterity of a practiced surgeon. Now, inasmuch as all our physicians and surgeons must at the first be inexperienced, is it not better that they first try their knives upon our animals before they are permitted to try them upon ourselves? The country surgeon is not often called upon to make a capital operation, and he soon loses much of his dexterity, no matter how well he may have been prepared originally. Is it not better for him to keep his "hand in" upon animals, than that he should get so out of practice as to bungle from excitement when an important case requires his best services? It cannot possibly be disagreeable to minister to the relief of the creatures who serve us so faithfully and affectionately, nor can it possibly detract from the dignity of the profession, since the dignity of medicine, like that of every other calling, depends on how much it contributes to the public good. The brief statement already given of the parasitic cause of Texas fever, makes it evident enough that no one is competent to investigate the causes of disease in man or animals who has not had the benefit of thorough scientific training, and such men are rarely to be found outside of the medical profession. We trust, then, that those in the profession will cheerfully come to the aid of the great agricultural interest of the State in this matter, and humanely help to rescue our four-footed friends from being longer the victims of all sorts of domestic or interested quackery.

The preamble and resolutions referred to on pages 482–3, gave rise to the following discussion:

Mr. Gould, of New York, said:

I would like, Mr. President and gentlemen, to say this much in explanation of the report: It was utterly impossible to make it in the form of specific enactments, for the reason that the local governments of the different States vary to so great an extent.

For example, the State of Rhode Island has no county government whatever, and duties imposed by law on county officers would find no officers there to fulfill them; and so in various other ways it is found that the different constitutions of the States prevented any uniform enactment. The committee therefore decided to present their report in the form of general propositions, to be submitted to the various Legislatures, to be reduced to form by those Legislatures, in accordance with their respective powers.

Mr. Piper, of Illinois. I move, Mr. President, that the report be received.

The motion prevailed.

Dr. Morse, of Missouri. Mr. President, for the purpose of giving all who may desire an opportunity of saying something on these propositions, I offer the following resolution, and move its adoption:

Resolved, That in the discussion of this report, members be limited in their speeches to five minutes' time, unless, by consent of the Convention, that time is extended.

Mr. Hamilton, of Pennsylvania. I move, sir, to amend by striking out "five," before minutes, and inserting "ten."

Dr. Morse. I accept that amendment, Mr. President, and renew my motion.

The motion prevailed.

Mr. Poole, of Indiana. I move, Mr. President, that we take up the propositions offered by the committee, *seriatim.*

The motion prevailed.

The Secretary read the first proposition, as follows:

1. Three commissioners, or such other number as the Legislature may deem proper, shall be appointed by some competent authority, to hold their offices for the term of five years, and shall report annually to their Legislature.

Mr. Poole, of Indiana. I move its adoption.

The motion prevailed.

The Secretary read the second proposition, as follows:

2. Such commissioners shall watch over the general welfare of the cattle within the State for which they are appointed, and particularly for the purpose of preventing the spread of dangerous diseases among them, and of protecting the people of the State against the dangers arising from the consumption of diseased meat.

The President. I would suggest that perhaps the word "animals" would be preferable to "cattle."

Mr. Gould, of New York. On behalf of the committee, I will accept that suggestion as an amendment, Mr. President.

Mr. Poole, of Indiana. I move that the proposition be adopted as amended.

The motion prevailed.

The Secretary read the third proposition, as follows:

3. They may, from time to time, appoint such assistant commissioners to aid them in the discharge of these duties, as the welfare of the public may require.

Mr. Poole, of Indiana. I move, Mr. President, the adoption of that proposition.

The motion prevailed.

The Secretary read the fourth proposition, as follows:

4. They should have power to administer oaths, and to prescribe, from time to time, such rules and regulations as may be necessary to accomplish the objects of their appointment.

Mr. Poole, of Indiana. I move the adoption.

The motion prevailed.

The Secretary read the fifth proposition, as follows:

5. They shall give the public notice of the outbreak of any dangerous disease, and such practical directions for its avoidance as they may deem necessary.

Mr. Poole, of Indiana. I move its adoption.

The motion prevailed.

The Secretary read the sixth proposition, as follows:

6. They may either place such diseased animals in quarantine, or cause them to be killed, as may seem necessary for the public protection; but, in the latter case, they shall cause an appraisal of such animals to be made, and the county or State shall pay such proportion of the appraised value as may be provided by law.

Mr. Poole, of Indiana. I move its adoption.

The motion prevailed.

The Secretary read the first proposition, of the second general division, as follows:

1. The commissioners, or any asistant commissioners located in the frontier of the State, shall, at such time as may be prescribed by the commissioners, have power to inspect all the cattle brought into such State, whether by railroads, vessels and common roads, and shall have power to detain such railroad cars, vessels and droves or animals on common roads, long enough to make a proper inspection of them, for the purpose of ascertaining their sanitary condition.

Mr. Poole, of Indiana. I move its adoption, Mr. President.

The motion prevailed.

The Secretary read the second proposition, of the second general division, as follows:

2. No animals shall be permitted to enter the State which shall be deemed by such assistant commissioner to be capable of diffusing dangerous diseases or of injuring the health of the inhabitants.

Mr. Reynolds, of Illinois. It strikes me, Mr. President, that one man is, by that section, permitted to exercise a very great authority. It seems to me that provision should be made by which an appeal can be ultimately taken to the decision of the commissioners themselves.

Mr. Gould, of New York. Allow me to remark, Mr. President, that the committee recognize the full force of the objection made by the gentleman from Illinois, (Mr. Reynolds), but it seemed as if we were reduced merely to a choice of evils. If any possible way could be provided by which a council could be held, I should be very much in favor of any proposition looking to the accomplishment of that end; but here is a train coming in, there is no time to stop; the assistant commissioner discovers this disease, and he must either have the power to promptly detain such animals or run the risk of diffusing these horrible cancers, of which I have before spoken, through whole communities.

I suppose that the States will appoint gentlemen of character and responsibility as commissioners, and the only way that I see of obviating the difficulty is by providing for an appeal to them, and giving them power to at once remove any assistant who acts corruptly or viciously.

Mr. Reynolds, of Illinois. All I desire, Mr. President, is to devise some means by which, in case of difference of opinion, an appeal may be taken from the assistant commissioner to higher authority.

Mr. Smith, of Misssouri. It seems to me, Mr. President, that there can only be one way by which the suggestion of the gentleman from Illinois (Mr. Reynolds) can be carried out, and that is by providing for an appeal to all the commissioners—the cattle being arrested in transit until a decision is had from them.

In case of a provision of that kind, it seems to me that unless the owner of the cattle should consider himself very much aggrieved by the decision of the assistant commissioner, he would not be willing to submit to the delay incident upon an appeal to the full board, but would prefer to abide by the first decision.

I move to amend by adding to that section, "and an appeal shall be allowed to the commissioners in all such cases."

The President. Suppose we weigh this matter a little, gentlemen. Take the case of cattle being detained at Buffalo. I can be readily on hand, but another member of the board, Mr. Patrick, lives in Syracuse, one hundred and fifty miles from there, while yet another member, Mr. Gould, lives in Hudson, which is two hundred miles further east. There would be a very great inconvenience in getting these gentlemen all together, though two could be quite easily reached, and I suppose that would be the case in other States as well. Suppose, sir, that instead of "commissioners," you say, "to a majority of the commissioners."

Mr. Smith, of Missouri. I accept your amendment, Mr. President.

Dr. Rauch, of Illinois. I will suggest, Mr. President, that instead of saying "a majority of the commissioners," say "one commissioner," for it is absolutely necessary, sometimes, that cattle should be stopped at once, and also that, in case of difference of opinion, a decision on appeal should be had in the shortest possible time.

Dr. Morris, of New York. Mr. President, I heartily second the motion of the gentleman from Illinois (Dr. Rauch); for I fully appreciate the motives which caused him to make it.

Butchers are very anxious to get the cattle into the slaughter houses. They can be bought at reduced prices, on account of defects, extensive bruises or disease; then the butchers will take them and spirit them away, right under the eye of the commissioner, if that can possibly be done. I had that occur in my own experience, and remember one case, particularly, where eighteen head were taken out of the yard without a permit and driven to the slaughter house, where they would have been beef within an hour, if I had not discovered the facts.

The power of assistant commissioner, in these cases, should be absolute and without any appeal, for in no other way can these animals be certainly detained.

Prof. Smith, of Missouri. I see precisely the same difficulty as the gentleman from Illinois (Mr. Reynolds) does. Here is a herd which the inspector wishes to stop. The drover is anxious to get on, and will give $100 to go through and say nothing—that, of course, we cannot prevent. But, suppose the inspector chooses to stop them for his own satisfaction, then either party may appeal to the commissioner. I do not believe that so much power should be entrusted to a single inspector, from whose decision no appeal can be taken.

Mr. Poole, of Indiana. I merely wish to make one remark, Mr. President. I was a member of that committee whose report is now under discussion, and while I do not like any exercise of arbitrary power in a free government like ours, there are yet times, occasions and circumstances that necessitate it. We acknowledge it and have acknowledged it in our Government from time immemorial. For instance, coming to New York from Europe, you are boarded at Sandy Hook, and the vessel is examined by one man. The whole vessel is examined, and if there happens to be any one on board with anything like a contagious disease, that person is forced to remain at quarantine as long as the officer sees fit. We are asking, only, that the one-man power shall be used in a case somewhat parallel, for is it not as positively an actual necessity that cattle should be prevented from shipment, who would breed an infectious disease, not only among their own kind, but among the human family as well? I think that the safety of the people of all communities, throughout the country, requires that this arbitrary power shall be used, at times, as an exigency that cannot be avoided.

Let the resolution pass; then let each Legislature protect its own people as the circumstances and localities of the state require—as they certainly will do, no matter what we recommend here.

D. McMillan, of Ohio. I think, Mr. President, we had better let this matter remain as it is. I presume that none of our Legislatures will appoint commissioners without first requiring them to give heavy bonds for the performance of their duty. If, then, a commissioner damages a dealer by arresting his stock, he is made responsible, and the courts will try the question.

Dr. Kile, of Illinois. As a deliberative body, Mr. President, we should recommend nothing that will not be found beneficial to and be enacted by the different States. Now, while such a proposition as this which is proposed might be adopted, for instance, in other parts of the country, how could it be made to work in a State like Illinois, with her 2000 miles of railroad; with ferries at every crossing for 400 miles along the Mississippi, and for 300 or 400 along the Ohio and the Wabash. In Pennsylvania and New York there are a few single points to which all cattle tend, and where they can be inspected without any trouble to the shipper or to the purchaser. But suppose that here, at any point in Illinois, I am obliged to halt a drove of cattle at Tolono, until the commissioners—scattered all over the State—for there will have to be a very great many of them—shall have decided my appeal. Why, sir, the whole scheme is perfectly futile. So far as the State of Illinois is concerned, I cannot see that it would be of any practical benefit.

While I am ready to admit that this proposition will work very well in the Eastern States, I do think that it proposes to place too much power in the hands of one man, in view of the manner in which this power must be distributed over this section of the country.

Dr. Miles, of Michigan. Mr. President, it is certainly time that somebody must have the power to stop diseased animals, if we have any sanitary regulations whatever. I do not exactly appreciate the point of the last gentleman, relative to his cattle being stopped at Tolono, for if they are diseased, they certainly should be stopped at the very first start, in order that the Eastern States and the rest of our new territory may be protected.

Then, again, if it is understood that diseased animals are not to be allowed to go forward, dealers will be very careful how they start such in the first place.

Mr. McCoy, of Kansas. It does seem to me, Mr. President, that this measure proposes to vest too much power in one man, and besides that, in view of the laws of some of the States, it would be practically impossible to carry it out. In Missouri, for instance, it is provided that each county shall appoint three commissioners, who shall constitute a board of cattle inspectors, whose duty it shall be to inspect cattle when presented, and, if found healthy, to admit them.

The appealing from the decision of one of these commissioners would, if such a proposition as the one proposed were enacted into a law, be almost ruinous to the drover. The consequence would be that very many of these officials, knowing the unwillingness with which an appeal would be taken, would levy black-mail on the cattle passing through their district, whether they were healthy or not.

Or, if the one-man power principle should prevail, no means of appeal being provided, every one who knows anything about our western country can but see how great a detriment it would work to the bringing forward of our cattle. That man would have the power, as we express it West, to make every drover bringing in cattle for inspection, "come down" a little, or very politely inform him that his cattle are diseased. Time and again I have heard drovers coming through the southwest say, in being asked how they succeeded with these commissioners—"Well, I presented a few *green* arguments to them, and it was the easiest thing in the world for them to see that my cattle were healthy."

I tell you, gentlemen, this measure proposes to put too much absolute authority and power in the hands of one man, especially when no means of appealing from his decision are provided.

Mr. Barrett, of Missouri. There certainly, Mr. President, ought to be some provision by which the cattle-drover may be protected. If you provide for an appeal from the decision of an assistant commissioner to a commissioner or to several commissioners, that functionary is going to be very careful how he stops cattle, and if he does stop them when they are not diseased, in order that he may gain a certain sum of money thereby, he will most certainly lose his position, when the case in which he has so conducted himself comes to be investigated.

I do not wish to detain the convention, Mr. President, and am not anxious to make any speech.

Mr. Hamilton, of Pennsylvania. I am in favor, Mr. President, of letting each Legislature decide this matter for its respective State. For instance, you here in Illinois can appoint an inspector to inspect an inspector and another inspector to inspect the two inspectors. [Laughter.] Some gentlemen seem to think that inspectors are to be bribed, all over the country; if that does turn out to be the case, then they will all be a set of infernal rascals—and that is something that I do not believe will be the case.

Mr. Piper, of Illinois. There is one point, Mr. President, that strikes me, which is just this: I do not think that any Illinois man is going to bring diseased cattle—even try to get them passed—when he knows that even if he succeeds in doing both of those things, he has still got the Eastern inspectors to face.

Mr. Reynolds, of Illinois. I offer the following, Mr. President, as an amendment to the amendment of the gentleman from Missouri, (Mr. Smith):

"In case the decision shall be against the inspector, the State shall indemnify the owner for reasonable damages and expenses."

Mr. Smith, of Missouri. I accept that amendment, Mr. President.

Mr. Gould, of New York. Mr. President, I call for a division of the question on the amendment.

The motion prevailed.

The President. Gentlemen, you will now vote on the first branch of the amendment, which is, "appeals shall be allowed to a majority of the commissioners in all such cases."

The amendment was adopted—ayes 19, nays 12.

The President. You are now about to vote upon the second division of the amendment, which is as follows:

"In case the decision shall be agaimst the inspector, the State shall reasonably indemnify the owner for reasonable damages and expenses."

The amendment was lost upon *viva voce* vote.

The proposition was then adopted as amended.

The Secretary read the third section of the second subdivision, as follows:

3. No train shall be allowed to proceed unless the animals contained therein have been supplied with food, water and rest within twenty-four hours next preceding the time of such inspection.

Mr. Poole, of Indiana. I move that it be adopted.

The motion prevailed.

The Secretary read the fourth section of the second subdivision, as follows:

4. All animals shall rest and have access to food and water for twenty-four hours, after having travaled for a similar period.

Mr. Poole, of Indiana. I move that it be adopted.

The motion prevailed.

The Secretary read the fifth section of the second subdivision, as follows:

5. The railroad companies shall provide suitable yards for feeding, watering and resting the animals traveling on their trains, and for quarantine purposes, which shall be kept in a cleanly and wholesome condition, to the satisfaction of the commissioners.

Mr. Poole, of Indiana. I move its adoption, sir.

The motion prevailed.

The Secretary read the sixth section of the second subdivision, as follows:

6. Each train, on leaving its point of departure, shall have certificates signed by an assistant commissioner, which shall certify that all the animals therein were in a healthy condition at the time of its departure, and also the exact time of its leaving; and such certificates and indorsements thereon of the time of resting and the time of departure of the train at subsequent resting and feeding places shall be exhibited to the proper authority whenever required.

Mr. Poole, of Indiana. I move its adoption, sir.

The motion prevailed.

The Secretary read the seventh section of the second subdivision, as follows:

7. Proper penalties should be inserted to prevent the bribery of officers charged with the execution of these provisions.

Mr. Poole, of Indiana. I move its adoption, sir.

The motion prevailed.

The Secretary read the eighth section of the second subdivision, as follows:

8. Proper penalties should also be provided for those who interfere with or resist the officers charged with the execution of these provisions.

Mr. Poole, of Indiana. I move its adoption, sir.

The motion prevailed.

The Secretary read the third general division, as follows:

3. WHEREAS, A malignant disease among cattle, known as Spanish fever, has been widely disseminated by the transit of Texas and other south-western cattle through the Western and North-western States during the warm season of the year, occasioning great loss to our farmers, and possibly endangering the health of our citizens therein,

Resolved, That this convention earnestly recommend the enactment of stringent laws to prevent the transit through these States of Texas or Cherokee cattle, from the first day of April to the last day of October, inclusive.

Mr. Earle, of Indiana. I move to amend, Mr. President, by inserting "first" instead of "last" day of October.

Mr. McMillan, of Ohio. And I move to amend, Mr. President, by striking out "the first day of April," and inserting "the first day of March."

Gen. Patrick, of New York. I would like to say a word, Mr. President, regarding this question of time. As to how early in the season it might be wise to admit cattle, I am not able to say, but I do know that on the twenty-fourth day of November we found in the city of Buffalo, while *en route* for this place, two of the sickest and most thoroughly diseased Texas steers I have ever seen—one of which died within an hour or two, and the other of which would have died within twelve hours, had it not been killed for the purpose of examination. This happened after we had had heavy frost and some snow. I think, as we know from Mr. Hill's statements, the disease still exists in this State.

Mr. Christie, of Canada. If I mistake not, Mr. President, it has also been stated that this disease is still prevailing in St. Louis.

Mr. Poole, of Indiana. I am told, Mr. President, by gentlemen who had much more experience in this matter than I have had, that they are perfectly satisfied there is no danger at all after the first of October, by which time, as a general thing, we, here in the west, have heavy frost. It is not expected that cattle brought here at that time would be shipped—they could not be, on account of their poor condition; but the idea is to keep them here all winter, feed and graze them the next season, and the next fall send them to a market. There may be isolated cases of the disease, and some cattle may die after the first of October; and, as regards the statement of Mr. Hill, I understand him to say that the animals referred to died from the effects of disease imported by cattle in the hot season, and not from cattle brought this fall—and he distinctly states that to be the fact. His remarks, therefore, furnish no data for supposing that cattle bring any disease among us as late as October.

Gen. Patrick, of New York. My impression is, Mr. President, and I will state that it is so with another of our commissioners (Mr. Gould), that the cattle we saw in Buffalo were from a herd just purchased and brought forward from Kansas.

We of course understand the propriety of bringing cattle into this State at as early a day as possible, for the reasons already stated; but some safeguards certainly should be thrown around the trade, by which the shipment of such cattle may be prevented.

Mr. Christie, of Canada. Mr. President, Mr. Hill's statement, as I understand it, was this—that those steers died within eight days. What does that statement prove? It proves just this, that if they had not been in contact with Texas cattle since the cattle belonging to the same herd died (and I understand that to be Mr. Hill's statement), that those cattle were contaminated by the native cattle of the same herd, and after the period necessary for the second incubation of the disease had elapsed, took that disease and died. This one instance sufficiently proves the impropriety of allowing cattle to come in at an earlier date than is specified, because what has happened in Illinois may happen in Kansas. It also establishes the fact that the disease may exist up to the twenty-fourth day of November—the meeting with it at Buffalo at that time has already been spoken of—and for all we know, it may exist later still.

Dr. Johns, of Illinois. So far as I am advised, Mr. President, cattle in the condition of those met with at Buffalo have never imparted the disease under any circumstances, for, as we learned the history of this disease, it has never been communicated except by cattle in apparent health. We have no testimony that those cattle had imparted the disease (in fact, the universal testimony is that it is not communicated after frost), though they may have had and probably did have it.

Mr. Hill has not stated what the cattle spoken of by him died from, and those gentlemen who jump at the conclusion that they died from Spanish fever, have very slight grounds for their belief. In the west, nothing but a *post mortem* examination can determine as to whether a certain animal has died of this Spanish fever; and it is not stated that these steers were so examined.

Mr. Earle, of Indiana. I hope, Mr. President, that gentlemen will consider well before casting their vote, for it is of the utmost importance that these cattle should be brought in here at as early a day as possible, in order that they may rest before cold weather, get well over their bruises, and take their winter feed properly. If they cannot be brought in until November or December, they become so sore and are in such bad condition, that they will not take their feed and go through the winter as they ought.

Mr. Gould, of New York. Mr. President, our experience in New York shows that it will not be safe to admit cattle into that State at as early a period as is proposed by the amendment. As was stated by my friend (General Patrick), this disease has manifested itself as late as the twenty-fourth of November, and I may state in addition to that, that in the county of Orange, on the twenty-sixth day of October, a native cow died, which had taken the disease from another native animal. There are cows in the State of New York which could not be purchased for fifteen thousand dollars; there are also cows and bulls in Canada that could not be purchased for a very large sum, and in both sections there is a large amount of very fine stock. It behooves us, therefore, to be exceedingly careful how we expose our herds to the ravages of this fearful disease.

But why cannot we change this proposition, so as to admit these cattle into Illinois and the grazing States (as they seem to desire), on the first day of October, while we substitute the first day of November for the Province of Canada, the State of New York, and the States lying east of New York. It seems to me that by agreeing upon that, we can act harmoniously.

Mr. Moore, of Missouri. If that proposition suits New York, Mr. President, it suits Missouri. Illinois knows what she wants, but we in Missouri don't wish to have these animals brought through that State at so early a day as some gentlemen propose.

Dr. Miles, of Michigan. While I am anxious, Mr. President, to facilitate the transmission of cattle to eastern markets, it is of the utmost consequence that we protect ourselves; but as Missouri, Kansas, and other States lying farther west, are as much interested in this matter as we are, and understand it better, I would like to hear from gentlemen representing these States in regard to the matter.

Mr. McCoy, of Kansas. Mr. President, through this portion of Illinois, a large portion of Missouri and Iowa, and also a portion of Kansas, the farmers rely upon disposing of their products by preparing fattening stock for the eastern markets.

Again, sir, there is no proposition embodied in this report whereby cattle from the southwest, even after being wintered, may be moved to market, notwithstanding there are to-day coming into Illinois, by the Union Pacific Railroad, ten thousand head of southwestern cattle, which are to be fattened this winter upon the pastures of Illinois particularly, and of Indiana, in part—a large per cent. of which will be ready to go to market in July. But as I have said, there is in the proposition no provision whereby those cattle, when fattened, may be permitted to go to market.

Again, do you propose, gentlemen, to prohibit the people of the southwest from coming to market at all—do you propose to make recommendations here to-night, the practical effect of which would be to exclude us utterly and completely? I believe every gentleman, in his own heart, would answer "No." But, I declare to you that such will be the practical effect of these propositions if embodied and enforced as laws.

That is all that I have to say, gentlemen; you can do as you like, but you must take the responsibility.

Mr. Poole, of Indiana. This resolution, Mr. President, is not such a one as will suit the States of New York, Illinois or Indiana, for this reason: That resolution says: "Texas cattle shall not be admitted from the first day of April to the last day of October." Its terms are broad enough to prevent from being shipped to market cattle which have been wintered and fattened here. Some discrimination must be made, specifying more particularly what animals are meant.

The President. The understanding of the resolution by the chair is, that cattle shall not be introduced from the southwestern country into these States.

Mr. Poole. But it does not say so, sir, and any such construction must be an inference only.

By the way, in regard to those cattle at Tolono, I do not think that case goes, by any means, to show that those animals took the disease from the native cattle.

Mr. Christie, of Canada. How do you account for it, sir?

Mr. Poole. In the same way as you, sir, as a common-sense man, would account for a great many contagious diseases through the United States, both among the human family and animals—that is, that some persons will be affected by a disease very quickly, while in others it will linger and linger for months before breaking out. I leave it to any medical or scientific man, if that may not be the case here, for these cattle ran in the same places and over the same trails as did those who took it so early and died. They may have become gradually infected with the disease, and the poison have worked very slowly into the system, but in the course of time have sickened and died from it.

Mr. Christie, of Canada. The simple answer to all that, as it seems to me, Mr. President, is, that, as yet, we have no evidence showing that the time necessary for the incubation of the disease is longer than ten weeks.

Mr. Earle, of Indiana. When did the Texas cattle that died in Buffalo take this disease?

Mr. Christie. I cannot say, sir. They may have come directly from Texas, but that is an answer, so far as the picking up of their pasturage in the same field where the Texas cattle had pastured, is concerned.

And then, again, according to the gentleman's own statement, a severe frost will kill this disease.

Mr. Poole, of Indiana. We all know, Mr. President, that both animals and people freely take contagious and infectious diseases at different periods, as, for instance, I have known some animals to take this Texas cattle disease in three weeks, others to have been seven weeks in contracting it, and others probably ten, and this being so might not the periods be still farther extended?

Dr. Miles, of Michigan. The gentleman speaks, Mr. President, of the time required for taking this disease. I should like to know if he means after the exposure of the animal, the period of incubation, or the time that the native cattle may run with the Texas cattle without taking it.

Mr. Poole. I meant, Mr. President, from the time the animal was exposed until it exhibited any sign of the disease.

Dr. Miles. It is said, Mr. President, that native cattle may run with Texas cattle a long time without contracting the disease—that, when separated, some have not taken it at all, while others which remain will have it.

Mr. Poole. They may or may not. Mr. Eaton will tell the gentleman that some never take it.

I have certain knowledge, sir, of some native cattle that have run with Texas cattle the whole summer without contracting any disease at all. So, also, I know that some men have passed into a small-pox room and staid there a week without contracting that disease; while I know others who have taken it a long time afterwards.

And so in regard to these steers that have been spoken of. My idea is that they actually imbibed a small amount of this disease at the same time that these other cattle did, but that it remained in their systems in a very small speck, so to speak, until gradually extending, they became, after quite a long time, infected with it, and so died.

Mr. Christie. Four months.

Mr. Poole. Yes, sir; that seems to me not at all improbable, Mr. President, in view of the statements we have already had, to the effect that cattle placed in pasture where Texas cattle had run and pastured the winter before, had, the next season, taken this disease and died.

I will say, however, that after careful inquiry and diligent search of reports, I have never yet heard of or seen recorded a single case of Texas cattle fever occurring in Texas or along the Gulf coast. That being so, it seems to me that the whole history of this disease may be summed up in this—that the abuse of these cattle, and the over-driving of them while on their way, by being crowded in the cars and steamboats, and forced along in that brutal manner that is too well known, breeds an infection in the system. That is my idea of this matter.

We are willing, as western men, to divide the time, and make it, say the fifteenth of October.

The amendment was accepted.

Mr. Reynolds, of Illinois. It seems to me, Mr. President, that this matter can all be arranged if a blank is left for the time. Each State can settle this matter for itself. By adopting this course (especially in view of the fact that you have appointed a commission which certainly ought to be able to fix upon a proper time) no harm can be done, and this convention need not be troubled farther.

Mr. Christie, of Canada. The adoption of that suggestion, Mr. President, would cause all the proceedings of this convention to be a perfect nullity.

I wish to call the attention of the convention to the laws of the States west of this. Missouri says: "Nothing contained in this act shall be so construed as to prevent the transportation of such cattle through this State, on railroads or steamboats, or to prohibit the driving through any part of this State of such Texas or southern cattle as have been wintered at least one winter north of the southern boundary of the State of Missouri."

Kansas enacts: "No person or persons shall be allowed to drive, or cause to be driven, into the State of Kansas, or through any part thereof, any cattle from the Indian territory south of Kansas, or from the State of Texas, that may have come into the State between the first days of March and December of each year."

The law of the State of Illinois is entirely prohibitory. The law of Kentucky was: "It shall be unlawful for any person, after this act takes effect, during the time between the first day of March and the first day of November, in any year," etc. That law was amended this year to read as follows: "That an act approved February 28, 1867, entitled 'an act to prohibit the importation and sale in this commonwealth,' be and the same is so amended that it shall be lawful to import such cattle into the State at any time between the twentieth day of November and the first day of April in each year."

Those are the laws fixed by the Legislatures of several of the States that have suffered very much from this disease, and it does seem to me that they furnish some reliable data by which this convention may be guided.

I cannot believe that we have come together from such long distances, and at, in many cases, so much inconvenience, to pretend to thoroughly discuss the series of propositions for the purpose of controlling this disease, and then to, after all, acknowledge to the world that we knew nothing at all about it, and that cattle may be admitted at any time during the year.

Mr. McMillan, of Ohio. It seems to me, Mr. President, that we should act on the safe side regarding this matter. It does not appear that there really is not danger, more or less, at any time of the year, and if three or four months are set apart during which these cattle may be brought in, I do think that all is conceded that should be asked for, and that we are entitled to demand for the rest of the year such protection as our home interests may require.

I therefore move to amend so that the dates shall read "from the first of March to the first of November," and on this I move the previous question.

The President. Gentlemen, you have heard the motion; will you sustain the call for the previous question?

["Call the roll—call the roll."]

The President. The Secretary will call the roll.

Accordingly the roll was called.

The motion prevailed—yeas 24, nays 7.

The President. Gentlemen, you will now vote on the motion of the gentleman from Ohio (Mr. McMillan), that Texas cattle shall be excluded between the first day of March and the first day of November.

The motion prevailed.

Mr. McMillan, of Ohio. I move, Mr. President, that the original proposition, as amended, be now adopted.

The President. Mr. Secretary, you will please read the last paragraph of the report submitted by your committee.

The Secretary read as follows:

Resolved, That the interests of the community require the enactment of laws making any person responsible for all damages that may result from the diffusion of any dangerous disease from animals in his ownership or possession.

Mr. Poole, of Indiana. I move, sir, that it be adopted.

The motion prevailed.

Mr. Christie, of Canada. I move, Mr. President, the adoption of the report as a whole.

The motion prevailed.

Mr. Hamilton, of Pennsylvania. Mr. President, I offer the following resolution:

Resolved, That the Governor of Illinois be requested to have printed and forwarded to the Governors of the several States here represented, and to each delegate, a copy of the propositions just adopted.

I offer this resolution, Mr. President, in order that these drafts of proposed laws may be transmitted to the Governors of the respective States who have sent us here, and be by them embodied in their "messages," as I know some, at least, desire to do.

Mr. Gould, of New York. I must confess, Mr. President, that it does not seem to me the most delicate thing in the world for representatives of the different States to request the Governor of Illinois to take upon himself all the trouble and expense that will be incurred if the resolution is adopted.

Dr. Clendennin, of Ohio. That is exactly my view of the case, Mr.

President; and besides, I presume that the chairman of each delegation will report to the Governor of his own State such of our proceedings as may be by him deemed necessary.

Mr. Christie, of Canada. I have not the slightest idea, Mr. President, that the Governor of Illinois will regard such a request from this convention at all out of place. I renew the motion for the adoption of the resolution.

The motion prevailed.

Mr. Reynolds, of Illinois. I move, Mr. President, that we do now adjourn to nine o'clock to-morrow morning.

The motion prevailed.

So the convention adjournd.

THIRD DAY.

THURSDAY, December 3, 1868.

The convention met pursuant to adjournment.

Dr. Snow, of Rhode Island. Mr. President, the committee appointed on the subject of a name whereby the disease under consideration may be designated, have instructed me to report the term "Texas cattle fever," as being, upon the whole, a designation which will be best understood, and the most acceptable to the people.

Mr. Earle, of Indiana. I move, Mr. President, that the report be received and concurred in.

The motion prevailed.

Mr. Poole, of Indiana. Mr. President, as the propositions adopted by us yesterday, for the purpose of being enacted into laws by the Legislatures of the respective States, make no discrimination between cattle directly from Texas and those which have been wintered and prepared here for market, I offer the following resolution, as explanatory of the interpretation which this convention gives them. It is as follows:

Resolved, That in the resolution passed by this convention in regard to Texas and south-western cattle, and the time of their being admitted into the different States, it was not intended to mean or be construed to include Texas or south-western cattle that had been wintered in any of the States except in Texas, the previous winter.

I move the adoption of that resolution, sir.

The motion was seconded.

Dr. Morse, of Missouri. I do not think, Mr. President, that there is anything particularly wrong about this resolution, but there may be; and as at least one-third of the convention which adopted the propositions of yesterday (of one of which this resolution is said to be explanatory) have already left the city, it would be manifestly unfair for us to adopt this.

Dr. Townsend, of Iowa. I quite agree, Mr. President, with the gentleman from Missouri (Dr. Morse), that it would hardly be fair now to add any new matter to what has already been passed upon by this convention. I hope the gentleman will not press the resolution.

Mr. Poole, of Indiana. It was distinctly stated last night, Mr. President, if I am not very much mistaken, that the proposition of which this resolution is intended to be explanatory was not intended to include cattle wintered in the Western or North-western States previous to their being sent to market.

The President. That would be the understanding of the chair.

Mr. Poole. Exactly, Mr. President; and I am satisfied that there was not a member of the convention but who understood it in the same way.

Mr. Earle, of Indiana. Allow me to state, Mr. President, that I personally spoke to the chairman of the Canadian commissioners (Mr. Christie) in regard to this matter. I was informed by him that they interpreted the proposition of which this resolution is intended to be explanatory exactly as the chair does; and I know that to be the sentiment of the convention at large.

I hope gentlemen will not embarrass what we have already done by voting down this resolution, for its adoption is really necessary to a proper understanding of our proceedings by those into whose hands they may hereafter come.

Dr. Miles, of Michigan. This same matter was broached at our last session, Mr President, and it was admitted on all hands that there was no necessity of adopting anything of an explanatory nature. I think myself that there can be no misunderstanding in regard to it as it now stands; and I do hope that this fragment of the convention will not attempt to explain what the whole convention considered sufficiently clear.

Mr. Chadbourne, of Wisconsin. I think, Mr. President, that it is unfair for so small a number of us to change what was last night adopted by the whole convention. I voted on the question of time during which Texas cattle should be admitted, in accordance with what seemed to be the desire of the States mostly interested, though my own judgment was that in some of the States at least cattle might be introduced by the first of October.

But at any rate, the whole convention having recommended a certain measure for adoption by the State Legislatures, I do not think that so small a number as are now present should meddle with the subject further.

Dr. Rauch, of Illinois. Regarding the time at which Texas cattle should be admitted, Mr. President, I quite agree with the gentleman from Wisconsin (Mr. Chadbourne), for I am satified, from the experience of the past season, that they can be brought to Chicago by the first of

October, without any danger; but I scarcely think it is necessary, or that it was expected, that the proposition under discussion should apply to Texas cattle wintered here, and fattened during the next summer for the eastern markets.

The President. I would simply remark, gentlemen, that at Buffalo, of which point I have supervision, and where there are, say, two or three car loads of cattle arriving daily, it is one of the most difficult things in the world for the commissioners to ascertain whether those cattle have been in this western country a year or a month.

Mr. Poole, of Indiana. I merely offer this resolution, Mr. President, for the purpose of explaining a proposition which, as it now stands, might be considered by one person reading the reports of our proceedings to mean one thing, while another would construe the language to mean exactly the opposite thing. It seems to me exceedingly important that when the Legislatures of the respective States consider our propositions for the purpose of enacting them into laws, there should be no possibility of misunderstanding on this point; that it should be distinctly understood that, between the dates specified, we did not mean to exclude cattle that had been here a year or two, undergoing preparation for market.

I believe it is conceded that that was the understanding of the whole convention upon adopting this proposition at the last session. That being so, there can be no unfairness in the adoption of this explanatory resolution by those of us now present.

Mr. Gould, of New York. I hardly think, Mr. President, that the terms of this resolution are sufficiently guarded, but the general idea of it is eminently fair and proper, for we certainly do not wish to retain for a long time, in this western country, cattle that have been thoroughly disinfected.

When Texas cattle are brought to the frontier of any State, the commissioners and assistant commissioners thereof must be relied upon to determine any question of fraud with regard to the place of their importation and the time which they have spent there, and our people should not be deprived of a large amount of entirely unexceptionable beef through any ambiguity in our proceedings.

I cannot believe, Mr. President, that the important stock-growers and forwarders of the State of Illinois, or of any other of the western or northwestern States, would deliberately swear to a lie regarding the length of time their cattle may have spent in their section subsequent to their leaving Texas, and prior to their being forwarded to a market. I cannot believe it, sir, in face of the fact that as soon as Mr. Alexander was apprised of the diseased condition of his cattle he went around to gentlemen who had bought a portion of them (and that, too, without waiting for them to come to him), paid back to them the purchase money, and submitted, in the first instance, to a loss of twenty-seven thousand dollars. I do think that as long as there are men in the western country who pursue such a course as that, we may venture to take their affidavits with regard to anything concerning their cattle.

I should feel perfectly satisfied, as far as New York is concerned (and I believe other States will feel perfectly satisfied), with a proper affidavit, from an honest man, that his cattle have been for a certain time, say ten months, in the State of Illinois, for instance, being fed and fattened for a market. I should therefore be in favor of the resolution, with some little addition, like this, for instance, "provided that proper proof should be afforded," etc.

Mr. Poole, of Indiana. I accept that amendment, Mr. President.

Mr. Emery, of Illinois. It seems to me, Mr. President, that we shall find the result of this to be that all the stock of the State will be old stock.

Mr. Gould, of New York. I do not quite agree with the gentleman, Mr. President, because, as the proposition now stands, not a single Texas animal can be received after the first of March. The point is this, that there are now in this State, for instance, a vast number of cattle which will be in proper condition to send to market in May or July, but which are excluded by the terms of the resolution, as it now stands, and I do think that some provision should be made by which that difficulty can be avoided. It seems to me that it is nothing more than fair dealing with our western friends, who have so generously endeavored to meet with our wants, that I, for one, wish to show a similar spirit of amity in protecting their interests.

Dr. Townsend, of Iowa. I wish to say just a word or two more upon this subject, Mr. President. Last night, when this matter was up for consideration, several of us desired an adjournment, in order that this and other points might be deliberately acted upon. The convention did not adjourn, but its work was then supposed to be finished. And now that we have committed the very common folly of putting our work through in a hurried manner, we ought to take the consequences, and not, in this way, endeavor to perfect measures which ought to have been more carefully considered.

Again, the fact that we have this large amount of cattle in Illinois, is not going to embarrass the owners of them at all, for our resolutions and propositions are not the law of the State yet, by any means, and when they are enacted into laws the Legislature will doubtless provide the necessary safeguards and explanations. I therefore do not think that this resolution is at all necessary.

Mr. Hamilton, of Pennsylvania. I was at first inclined to favor this resolution, Mr. President, but now I shall vote against every proposition to amend what was done last night. First, because I do not think that so small a number of the convention as are now present should meddle with what was passed upon by the whole convention. And secondly, because the Legislatures of the several States will undoubtedly remodel our propositions and resolutions in such a manner as will best meet the wants of their constituents.

Gen. Patrick, of New York. It strikes me, Mr. President, that practically, this thing takes care of itself; for nearly if not quite all of these cattle spoken of will have gone to market before the several Legislatures will have taken action on our recommendations.

Besides that, the expression of opinion regarding the interpretation of this particular resolution, and the views in reference to it are so harmonious, that I do not think our intention can be misconstrued.

It does seem to me, too, that it will be acting unfairly toward the large majority of this convention—who have gone away supposing that the work of this convention was practically completed—to attempt to reopen this matter.

Mr. Gould, of New York. I offer, Mr. President, the following, and move that it be inserted after the excluding paragraph in the original resolution, as reported by the committee: "Provided, that it may be lawful to receive at any time cattle which have been ascertained, by proper proofs, to have been fed in any State north of Arkansas for a period of ten months next preceding the time of passing the frontier of any State."

Mr. Poole, of Indiana. I do not accept, Mr. President, the proposition of the gentleman from New York (Dr. Gould) for this reason: If the amendment should be adopted by the convention, and be promulgated as law by our next Legislature, it would preclude our cattle from going to market during the summer, as scarcely any that are now being and that will, during the winter, be prepared for market, will then have been within the State so long a time as ten months.

Mr. Gould. Say eight months, then.

Mr. Poole. As this resolution has occasioned a great deal of discussion, Mr. President, and has excited some considerable opposition upon one ground and another, I now withdraw the resolution, and move that we adjourn *sine die.*

Mr. Earle, of Indiana. Then, Mr. President, I offer the following:

Resolved, That all Texas or southwestern cattle that have been wintered in the State, shall be considered as native cattle.

Mr. Gould, of New York. I offer this as an amendment, Mr. President: "And that have been ascertained by proper proofs to have been wintered."

Mr. Earle. I accept that amendment, Mr. President. I move that the resolution be adopted as amended.

Mr. Carter, of Maryland. I offer the following resolution, Mr. President, and move its adoption:

Resolved, That the thanks of this convention are eminently due, and are hereby tendered to the Hon. Lewis F. Allen, for the able, courteous and impartial manner in which he has discharged the arduous duties of President of this convention.

Gentlemen, you have heard the resolution. As many as are in favor of its adoption, will please so signify it by saying aye.

The resolution was unanimously adopted.

Mr. Carter, of Maryland. Mr. President, I offer the following resolution, and move its adoption:

Resolved, That the thanks of this convention are hereby tendered to the Governor and cattle commissioners of the State of Illinois, and the citizens of Springfield, for the kind and liberal hospitality extended the members of the convention during our sojourn in their midst.

The resolution was unanimously adopted.

Mr. Carter, of Maryland. I offer the following, Mr. President:

Resolved, That the thanks of the convention are hereby tendered to Hon. Joseph Poole, of Indiana, temporary chairman, and the officers of the convention, for their efficient discharge of the duties of their respective positions. Also, to Dr. Morean Morris, of New York city, and Dr. John H. Rauch, of Chicago, Illinois, for their valuable contributions to the scientific information of the convention.

The resolution was unanimously adopted.

Dr. Clendennin, of Ohio. Mr. President, I offer the following resolution:

Resolved, That the secretaries of this convention, together with the members from this State—who shall be appointed by the chair—be constituted a committee to superintend the printing and publication of the proceedings of this convention.

The resolution was unanimously adopted.

The President. I appoint Messrs. Rauch and Emery, of Chicago, and Mr. Reynolds, Secretary of the State Agricultural Society, to act in connection with the secretaries, in preparing for publication a report of our proceedings.

Dr. Miles, of Michigan. Mr. President, I move we take from the table the resolution in regard to the appointment of a commissioner for the purpose of investigating the Texas cattle disease.

The motion prevailed.

Dr. Miles. That resolution, as originally offered, Mr. President, was to memorialize "Congress." That was stricken out and "War Department" inserted. Then a substitute was offered authorizing this convention to appoint a commissioner. The whole matter was laid upon the table. The first question, therefore, would be upon the substitute, which

I hope will be voted down, as it is ascertained that we cannot command the services of those scientific gentlemen, who were then supposed to be available. We need information at once, and I am satisfied that we can get it in the best manner from the War Department, through its detailing scientific gentlemen to proceed to Texas, and there collect everything necessary to supplement the investigations already made in New York. I hope, therefore, that the substitute will not prevail; but that the original resolution, as amended, will be adopted.

Dr. Clendennin, of Ohio. Inasmuch, Mr. President, as it would be of no use to memorialize the War Department, I move that we reconsider the amendment whereby in the original resolution "Congress" was stricken out and "War Department" inserted.

The motion prevailed.

Dr. Clendennin. I now move that the amendment be laid upon the table.

The motion prevailed.

Gen. Patrick, of New York. Mr. President, I suggest this, "that Congress be requested to make an appropiation, to be expended under the direction of the War Department," etc. I do not offer that as an amendment, though I think the adoption of it, as such, would secure all that we desire.

Dr. Clendennin. I will accept that, Mr. President, as an amendment. I move the adoption of the resolution as amended.

The motion prevailed.

The President. I appoint, to serve on that committee, Messrs. Clendennin of Ohio, Rauch of Illinois, Gould of New York, Miles of Michigan, and Townsend of Iowa.

Dr. Clendennin, of Ohio. Mr. President, as we all appreciate the importance of obtaining more general and accurate knowledge of the diseases incident to our native stock, I offer the following:

Resolved, That the delegates of the several States here represented shall feel themselves called upon to represent to the Legislatures of their respective States the necessity of adopting some measures for the collection and diffusion of more accurate knowledge relative to the habits and diseases of our domestic animals.

In the west, Mr. President, we have no institution specially set apart for these purposes, though I am aware that in New York you have. I believe that such a resolution as I have offered, emanating from this convention, will receive intelligent and favorable consideration. I move its adoption.

The motion prevailed.

Mr. Reynolds, of Illinois. I offer this resolution, Mr. President:

Resolved, That when the committee on publication shall have prepared the report of the proceedings of this convention, they be and hereby are requested to forward the copy thereof to the Governor of Illinois for publication.

Mr. Gould, of New York. Though this resolution is offered, Mr. President, by a member from Illinois, I feel very delicate about asking the Governor of this State to incur this expense on behalf of the convention, and I must confess that it does not seem to me just right to throw the whole burden, at least, upon Illinois.

Mr. Reynolds, of Illinois. I am authorized to say, Mr. President, that Governor Oglesby is willing to receive the report as indicated in the resolution, and further, that he will see the proceedings published and distributed to the members of the convention, the heads of the States, and wherever else may seem most desirable.

I move the adoption of the resolution.

The motion prevailed.

Mr. Hamilton, of Pennsylvania. Mr. President, I move that we do now adjourn *sine die.*

The President. Gentlemen, before putting that motion you will permit me to offer you my congratulations upon the successful prosecution and termination of your labors. You have met under circumstances of great responsibility, and, I must say, of somewhat great public excitement; you have discharged your duties, I think, faithfully and well.

To the Governor of the State of Illinois we are under great obligations for the hearty zeal with which he co-operated with the first inception of this movement, which he has carried out with so much earnestness and good will, and we cannot also but feel greatly obliged to him that he has by his presence added so much to the dignity of this convention through being daily with us and giving to us his countenance and approbation.

For myself, gentlemen, I feel very highly honored at being elected to preside over a body representing so much wealth and integrity of character as is combined in this convention, wherein so much wisdom and so much executive ability are required at the hands of its presiding officer.

But, so far as regards myself, personally, the best thing that I can do is to tell a story, as was occasionally the habit of the lamented Lincoln.

Some four years ago, before that best of men was foully murdered, I, as an old acquaintance and a great admirer, called to see him. *I did not,* gentlemen, wish to ask him for any office, but merely looked in on him socially. I congratulated him on the success with which he had managed the affairs of the Government, when he, with all the simplicity and artlessness of a child, replied: "Mr. Allen, I have done just as well as I knew how."

Gentlemen, I have done just as well as I know how while presiding. I feel truly gratified at the confidence you have placed in me and at the hearty vote of thanks you have accorded me. Wishing each and all the utmost measure of prosperity (great applause), I bid you farewell.

The convention now stands adjourned *sine die.*

APPENDIX.

Dr. Rauch—I find, since my return from the meeting of the Cattle Convention, that I did not place enough importance upon the results of my treatment of cases of Texas fever. The first animal that showed marked signs of the disease, that recovered, was the one I treated, also that the only ones in a certain section of the Fifth Ward that are now living, and were exposed, are those that I had treated. I find also that a number of the cases that I supposed under treatment, were really not, as my directions had not been carried out. For the purpose of throwing more light on this question, I append the weights of livers and spleens of Texas cattle that had been fed at Broadlands since June, and also of cattle that were brought direct from Texas *via* Galveston and New Orleans, that were slaughtered here a few days ago. Both lots were fat. I procured the blood, bile, and urine of one of those that had been fed at Broadlands—also, from a steer that came direct from Texas—and submitted them to S. A. Briggs, Esq., an accomplished microscopist, who reports that no trace of the spore or plant can be found.

TEXAS CATTLE—ARRIVALS DIRECT FROM TEXAS VIA GALVESTON—DECEMBER 17 AND 18, 1868.

4½	10	3½	9	3½	9	3½	8½	3	9	4	11	4	11	4	8½	3½	9	3½	8	4½	8½
3½	10	4½	8	2	9	2	10	3½	8½	3½	9	3½	10	4	9½	4	11	3	12	4	9
3	14	4½	9½	3½	10	3	11	4½	10	3½	9	3½	11	4	9	4	8	3½	8	3	8
4	12	3	10	3½	8	3	8½	3	10	3	8½	3	9	3½	8½	3	8	2½	8½	3½	8½
4	9	3½	11	4	9½	3½	6	3½	10	2½	8	3	8	3½	9	2½	11	4	8½	2½	11
3¾	10	4	8	5	12	3	10	3	9	4	8½	2½	12	3½	8	3¾	8	4	9½	3	8
3	8	4½	12	4	12½	4	9	4	8	4	9½	2	11½	4	11	2	12	4½	8½	4	11
3½	8½	4	8	3	9	4	12	4½	8½	4	9	2½	9	3	8	2	10	3½	10½	3½	9
2	11	3	10	3½	8½	3	11	4	12	3	11	3	11	2½	11	3½	11	4	9	4	9½
3	10	3½	10	4	8½	3½	10	4½	10	4	9	4	9½	3¾	8	3½	9	4½	8½	2	8
3	8½	3	9	4	10	4½	10	3¾	9	4	9½	3½	9	2½	12	3¾	12	4	10	2½	12
3½	9	2½	12	3¾	10	3½	10	2½	11	4	8½	3½	9	2½	8	3	10	4½	10½	2¾	9
3½	10½	2	8	3	9	3½	9	2	8	2½	8	3	8½	4	8½	4	11	3½	12	3½	14
3½	11	2½	9	3	8½	3	8½	3	9½	2	12	3	8	4	9½	4½	9	3½	11	3	9
4	8	4½	10	3½	8	3	10	3	8½	3½	8	4	8½	4	9	5	8½	3	9	3½	9½
3½	8	3½	11	2½	8½	3	11	4	8	2½	11	4	9½	4	11	3½	8	4	10	......	....
3½	10	3	8	2	7¾	3½	8	4½	9½	3	8	2	12	3½	10½	3½	9	2⅛	12	......	....
2	9	4	8½	2½	8½	3	8	4	11	4	11	3¾	8	3¾	12	3	9	3¾	8	......	....
3½	10	4	9	2	9	4	12	3½	10½	3½	9	2½	10	2½	11	3½	14	2½	11	......	....
3½	9	4½	12	2½	11	3½	10	3¾	12	3½	9	2¾	9	3	9	2¾	9	3	8	......	....
3¾	9	3	8	4½	10	3¾	8	3½	11	2	8	4	11	2½	10	2½	12	4	11	......	....
3	8	3½	8½	3½	10	3½	9	3½	9	2½	12	3½	9	3	11	2	8	3½	9	......	....
4	12	3	9	3	12	3½	9	2	10	2¾	9	3	8	4	9	3	9	3	9	......	....
3½	10	2¾	8½	4	11	4	8½	2	12	3½	14	4½	9½	4	9½	3½	9	3½	8	......	....
3¾	8	2	8	4	9	4½	9½	3¾	8	3	4	4	8	4	8½	4	11	4	8	......	....
3½	8	4	8	3¾	10	3	10	2½	11	3½	9	4½	8½	3	8	3	8	4	9	......	....
3½	9	3½	8	3	8	3½	8	3	8	3½	8	2½	8	3	8½	2½	11	4	9	......	....

Aggregate weight of spleens, 1,066 :average, 3.74. Aggregate weight of livers, 2,710; average, 9 51-100.

TEXAN CATTLE—FROM BROADLANDS—ALEXANDERS.

December 23, 1868.

Spleens and Livers.......	4	9	3½	11½	3½	12	3	12	3	11½	4½	12
" "	3½	12	4½	12	3	9	4½	14	4	11	3½	11½
" "	3	9	3½	13	3½	10	4	14	4	9	3	9
" "	3½	10	4	12	2½	12	3	12	3	12	4	8
" "	2½	12	3	12½	4	8	4½	11	3½	9½	5	13
" "	4	8	5	14	3	16	3½	13	3½	8	2	12
" "	3½	16	5½	13	3	11	3½	11½	4	14	2½	9
" "	3	11	4	8	2	9	4½	12	4	13	4	10
" "	3	9	4½	8	3½	12	3½	13	3	11½	3	9
" "	2	11½	4	9	3	10	4	12	3½	13½	2½	8
" "	3	11½	3	12	3	14	3	11½	3	14	3	14
" "	3	4	3	11½	3	8	2	9	3	12	3½	13
" "	4	9	3½	14	3	12½	3½	12	4	11	4	9½
" "	3	12	3	12	3½	9½	3	10	3½	13	4½	11
" "	3½	9	3	13	4	11	3	14	3	11	3	12
" "	4	11	4	16	4½	11	3	8	4½	12	....	....
" "	4½	11	4½	15	3	11	3	12½	4	13	....	....
" "	2	11	4	13½	3½	16½	3½	9½	2	9	....	....
" "	3½	16	3½	13	3	13	4	9	3½	12	....	....
" "	3	12	4	13	3	14	3½	12	3½	10	....	....
" "	3	13	3	11½	4½	11½	3	9	3	14	....	....
" "	4½	11½	3½	14	3	12	3½	10	3½	10	....	....
" "	3	12	3	8	3	9	2½	12	4	12	....	....
" "	3	13	3	9	2	11½	4	8	3	13	....	....
" "	3	14	4	11½	3	11½	3	16	3	10	....	....
" "	4	11	4½	11	3	11	3	9	3	12	....	....
" "	3½	13	4	9	4	9	2	11	4½	13	....	....

Aggregate weight of spleens	514
Average	3.426
Aggregate weight of livers	1709
Average	11.39

GRAPES IN OHIO.

BY G. W. CAMPBELL, OF DELAWARE, O.

Adirondac.—Black; very good. Foliage healthy; bunches large and compact; produced abundantly. Berries as large as well-grown Isabellas; quality good, pleasant flavored, pulpless, but not very sweet or rich. The earliest grape in my collection; begins to color August 15th, and ripens September 1st. Requires winter protection.

Alvey.—Black; growth vigorous and healthy; foliage abundant. Young vines bear sparingly, but as the vines acquire age, are quite productive, and bunches and berries of much larger size—this season as large as well-grown Clintons. Very juicy, nearly pulpless, and when fully ripe, slightly vinous and pleasant; rather acid till perfectly matured. Ripe from 15th to 20th of September.

Arnold's Hybrids.—Five of these hybrids, sent me by Mr. Arnold—Othello, Canada, Cornucopia, Brant and Autocthon—made a fair growth the present season, and seem to be in habit of growth much like the Clinton.

Brinckle.—Black; tender, and always winter kills at Delaware without protection. Bunch medium, berries black, oval, and too late for this locality; never acquiring sufficient sweetness to be desirable.

Cassady.—White; healthy, hardy and vigorous; bunch and berry medium, compact, second rate; thick skin and rather pulpy, but sweet. Ripe September 17th.

Catawba.—Three-fourths rotted, and did not ripen, being overtaken by early frosts.

Charlotte.—Red; bore a good crop the present season; vigorous and healthy in fruit and foliage. In color, flavor and general appearance so nearly identical with Diana—if not that variety—as to render a distinct name undesirable.

Clara.—White; foliage and wood grow good; shy bearer; bunches and berries medium, moderately compact; quality good. Requires protection in winter.

Creveling.—Black; one of the finest, if not the best black grape yet introduced. Requires rich soil and good culture. A moderate grower, usually healthy and productive; on poor, thin soils, often fails entirely.

Bunches long, usually loose; berries large, slightly oval; quality best. Ripens 1st to 5th of September.

Delaware.—Red; foliage and fruit healthy and fine; very little indications of mildew, and no rot. Fruit and wood ripened well. Good everywhere in central and northern Ohio. Ripe from 1st to 10th of September.

Eureka—"*Bogue's.*"—Black; a vigorous and healthy vine, of the Isabella character; not yet fruited at Delaware.

Hine.—Red; new, first exhibited at the Ohio State Fair in 1867; also the present season. A grape of fair quality, of the Catawba character, but earlier, less acid, and less pulpy. Perfect hardiness of vine not yet established.

Iona.—Red; foliage healthy; growth moderately vigorous. Bunches long, loose; berries medium, and entirely free from rot. Productive, but ripens here very slowly, and rather unevenly. Ripens from 20th of September to 10th of October.

Israella.—Black; moderately vigorous in growth; foliage mildewed some. Bunches and berries medium, very compact; rather pulpy, and not above second-rate in quality. Ripe 15th to 20th of September—at least two weeks later than Adirondac.

Ives' Seedling.—Black; vine perfectly hardy, healthy, vigorous, and moderately productive. Not above second quality as a table grape, but highly esteemed for red wine. Colors early, but improves by hanging long on the vine. Ripe middle to last of September.

Janesville.—Black; vine seems healthy; hardy and moderately vigorous, but has not fruited at Delaware.

Logan.—Black; hardy; free from mildew or wet; bunches rather loose; not very productive; not equal to Creveling as a fruit, but rather hardier vine.

Lorain.—White; retains about the same position as last season. The grape is very attractive in appearance, and of fine quality. In habit of growth it is somewhat like Iona, but with smaller and less abundant foliage. It is regarded as promising well.

Lydia.—White; healthy and moderately productive; bunches medium; moderately compact; berries large; oval; skin rather thick; pulp slight and tender; quality good; in northern Ohio and on the Island among the best white grapes; sometimes rots in unfavorable seasons.

Martha.—White; hardy; healthy; vigorous and productive. Bunches medium; berries usually irregular in size, but from medium to large, averaging the past season from ½ to ¾ inch in diameter. Color pale; yellowish green, with amber tint when exposed to the sun; covered with a delicate white bloom. Flavor very sweet, with a slight infusion of vinous acid. Skin thin but tenacious; does not crack in wet weather; hangs firmly to the bunch, even when over-ripe; slightly foxy, and decidedly of the Concord type, but more refined and delicate, having less pulp, and no unpleasant coarseness next the skin or seeds. To most persons a very acceptable grape, and the most reliable of all the white varieties for *general* cultivation. Ripe 1st of September.

Maxatawney.—White; healthy, vigorous and hardy; quite productive. Bunches large, long, rather loose. Did not ripen perfectly the past season, on account of early frosts.

Mottled.—Red; healthy, hardy, and very productive on old, established vines. Vine moderately vigorous; foliage abundant; wood short, pointed. Bunches large, usually shouldered; berries medium to large; distinctly mottled with different shades of red or maroon while ripening, but nearly a dark Catawba color when fully ripe; always rather pulpy, and acid next the seeds. Ripens a week or ten days earlier than Catawba; and is more desirable as a wine than table grape.

Norton's Virginia.—Black; the most difficult of all vines, unless it be the Cinthiana, to propagate, or transplant successfully; grows well and is hardy and vigorous, when well established; very tardy in coming into bearing, and bearing only moderately on old vines. Bunches medium to large; berries small and seedy, without much juice; desirable only for red wine, but stands at the head of the list, in most localities, for that purpose; pleasant-flavored, but too small and seedy for a table grape.

Opper.—Red; an unmitigated "fox," of no value.

Rogers' Hybrids.—Nothing special can be said of the most of these grapes beyond what has been heretofore reported. They have done fully as well as heretofore, and have been generally healthy in fruit and foliage. Nos. 4, 5, 9, 15, 19, 30 and 33 are among the earliest and most desirable. No. 4 is perhaps the handsomest in bunch and berry, and is entirely devoid of foxiness. No. 5 is also very fine, and will, when better known, be regarded as one of the best. No. 30 has a distinct Fontignau or Muscat flavor. No. 33 was very fine the present season, and ripened from the 10th to the 15th of September. No. 19 is much like No. 4, but with smaller bunches. No. 32 fruited for the first time, in Delaware, the past season. It is a red grape, with long, compact and handsome bunches; good in quality, but not equal to No. 5. All the above named were ripe before the 15th of September.

Salem.—Red; vine vigorous and healthy the past season; foliage large, strong and abundant. Specimens on exhibition at various places the past season were handsome and very good. Bunch large, rather compact, shouldered; color dark Catawba, covered with delicate purplish bloom; somewhat fleshy, like the foreign varieties, but sweet and slightly vinous; berries large; skin rather thick, seeds large. Ripened in northwestern New York Sept. 15th to 20th. It received the first premium at Painesville, at the Lake Shore Grape Growers' Exhibition, for the best six bunches, "quality to rule," the past fall.

Shaker Seedling.—Black; originated by the late N. Longworth, of Cincinnati, from seed of the Union Village, and is almost identical with that variety, but may be a few days earlier.

Telegraph.—Black; vine and foliage perfectly healthy, but has not fruited at Delaware.

Underhill's Seedling.—Red; vine hardy, healthy and very productive. Ripens 10th to 15th of September. A good grape, but a little foxy.

Union Village.—Black; vine and foliage of the strongest growth; bunches and berries very large. Usually healthy and very productive, but rather tender, and requires protection in severe winters. In character and flavor much like Isabella, but ripens about a week earlier.

Weehawken.—White; a seedling from Dr. Ludhof; a free grower, with foliage of the Clinton type. Untested for fruit or hardiness.

MANUFACTURE OF MAPLE SUGAR.

The total consumption of sugar in the United States for 1868 was, according to the January report of Agricultural Department for 1869, 543,033 tons of 2,240 lbs., or 1,216,393,920 lbs., being an increase of 16 per cent. over that for 1867; the average price of which to the wholesale merchant was about 12½ cents, the probable cost to the consumer being 15 cents. This gives the enormous sum of $182,459,088 as the sum paid for sugar in a single year. Of this amount of sugar but 23,000 tons were maple. This amount, with proper care, could have been quadrupled, as there are not more than one-third the trees tapped that could be, and of those tapped in many instances the yield, with proper management, could be doubled. Any one who has 25 trees and does not tap them misses one of the purest and most delicious sweets that we enjoy; but perhaps you say that it will not pay to fuss with that number. Let us see. Twenty-five tin buckets, at thirty-five cents, would be $8.75—all the outlay that would be necessary, as every farmer has a kettle that would evaporate the sap from that number. If he makes but two pounds to the tree he gets more than the original outlay for buckets, and is prepared for the next season, with no expense, except time, and it is at a season that he can do nothing that will pay better. Its manufacture is very simple. It was customary to put up forks in the woods on which to hang kettles, draw a log up on each side, gather up brush-wood as needed for fuel. If the bush is small and wood plenty, this will perhaps do, although you cannot make as good a quality of sugar as though evaporated in a pan. As in all other branches of industry, management and proper fixures change the aspect of affairs wonderfully. If the bush is over a mile from the house, it would, perhaps, be best to fix in the woods and boil there; but, if within a mile, I should prefer to fix near the house, drawing sap and wood. The wood should be cut the preceding fall, drawn the first snow, and securely corded under shelter, if practicable. Any wood, no matter how dozy, if it is dry, will answer. I have found that brush and small limbs will evaporate much faster than sound large wood, though the fire needs replenishing oftener, and wood that splits readily should be split fine, as a sheet of flame two inches thick under the pan is sufficient, and will boil as fast as though a foot thick; consequently, when building your arch, after you have put the grates in to place your wood on, fill up the back part to within six inches of the pan. I have a building on purpose for boiling, storing buckets, etc., situated about twenty rods from the house, and find that I can do considerable work at the same time that I am boiling. I also use the building and pans for cooking feed to fatten hogs and for storing tools, etc. It is situated on the side-hill, so that I can drive on the upper side and draw the sap directly from the gathering tank into the storing tank. The gathering tank is made of whitewood, two inches thick, with two heads, same as a barrel, only larger at the bottom than at the top; hight, three feet inside, and large enough to hold about seven barrels. In the top is cut a hole the size of a common pail bottom, through which to pour your sap, and when full set your gathering pail in and none can slop out. For gathering use sled or wagon, whichever is most convenient. The storing tank is made of whitewood, two inches thick, and is six and a half feet deep and about five feet across at bottom, four and a half at top, holding about thirty barrels. This is set high enough so that I draw the sap direct from the bottom, through a faucet, into the pan, but do not let it run directly in, but have a tin pipe of an inch in diameter, which runs nearly around the pan just at the top of the boiling sap; thus the sap is nearly boiling when it runs into the pan. A cheap pan can be constructed by any one. Get a sheet of good sheet-iron and a couple of pieces of two-inch plank about eight inches wide and long enough so that when the corners are truly rounded off that they will be just the length of the iron; then nail your iron on with two rows of closely driven shingle nails, letting the iron form the ends and bottom and the plank the sides. This makes a cheap evaporator, costing, exclusive of time, about $1.50, and will boil the sap from 100 trees with but little night work. Mine is made of two sheets of iron, made as follows: Having bought your iron, take it to the tin-smith and have it trimmed, then turn over three-quarters of an inch of the inside edge of each sheet, and lock them together with a hammer; place it on a solid block of wood, and with a punch make a row of holes one-half inch apart the whole length of the seam; then put in your rivets and rivet firmly; with a straight edge mark off seven inches all around the edge of your iron, cut out the corners, turn up the ends first and the sides will project beyond; these must be bent over and riveted with two rows of rivets; scrape the iron where seamed until bright, and then apply with a brush muriatic acid in which zinc has been dissolved. It can then be soldered the same as tin. Put a ball around the top of 3 16 wire. The last thing is the handles, which should be made of the same wire, and riveted to the sides eighteen inches from each end. Such a pan ought not to cost over $5, and will boil the sap from 300 trees. I believe, even if a man has kettles, that it would pay to make a pan and discard the kettle, as kettles are poor boilers, waste fuel, and make a darker colored sugar than pans. For those who wish to buy a pan Cook's evaporators would, perhaps, be the best in market.

For buckets I prefer tin, and think them cheaper at $50 per hundred than it wound be to have wooden ones given you. In the spring of 1862 I alternated 100 trees (having been induced to purchase 50 tin buckets), and carefully compared and satisfied myself that the tin were best. I found that I could get more sap from the tin every time than the wooden, and, to satisfy myself that it was not in the tree, I changed the buckets, with the same result, and, after a drying day or two, would get sometimes as much again from the tin as wooden. Another reason is, that the tin are not as liable to sour as wood; in fact, if you gather once each day, and when you gather rinse the sediment (a whitish powder) that settles on the bottom all out, they will never sour. They should be made to hold about ten quarts, larger at the top than bottom, of such a slant that they will just pack away in nests; thus they occupy but little storage room. The top should be strongly wired, and a hole punched under the rim (instead of rim-looped) large enough to slip over the head of an eightpenny fence nail, or other support. I prefer the nail. This should be driven into the tree, three or four inches under where you calculate to tap, slanting it up at an angle of 45°. Do not drive it very deep, as the strain is nearly square across the nail, hence it requires but little purchase to hold a bucket of sap. When you take up the bush be sure and draw the nails; use a block of wood an inch square, tied with a string four or five inches long, to a common claw hammer, used as a fulcrum, placing it above the nail, and you can draw ten thousand and not break a nail. The bucket being thus hung on the tree closely under the spout, is not filled with blowing leaves, dirt, etc., thus discoloring the sap; nor is it liable to be upset by any animal or by the snow melting away beneath them; and the sap is not as liable to be blown away as when vessels are set on the ground. If I used wooden buckets I would hang them in the same manner (have done so with what I use); and as for crocks they are too heavy to handle, occupy too much room for storage, and when broken are not even good for kindling wood; while, if a wooden one fails, if not fit to repair, it will at least make kindling wood. The loss in wooden buckets will be about two per cent. annually.

Another advantage of tin buckets is, that they are always ready for use; no hoops to drive, no soaking or scalding them to make them hold. When you take up the bush, scald them thoroughly, wipe dry, and set in the sun an hour or two, and then pack away where they will keep dry, and when you wish to tap the next season they are all ready. I have some that have been used seven seasons, and when we put up the buckets this season, the boys could not tell them from those purchased last season. Hence I think they have another good fault—that of durability. Having your arch built, pan, sugaring-off kettle (which should hold from five to seven pails full) and buckets, you are ready to commence operations.

The maple belongs to that class of plants called *exogens genus aceraceæ.* The kind usually tapped is the *acer saccharinum*, or hard sugar or rock maple. There is another kind, called the black maple (*acer nigrum*), but I can see no difference either in leaf, flower or seed, and believe that they are one and the same thing. The *acer rubrum*, or soft maple, is sometimes tapped, and makes a fair article of sugar, although as much can not be made from a tree as from the hard maple.

The proper time to tap is as soon as sap runs, which is usually some time between the 20th of January and 1st of March, though this season, 1869, it commenced the 1st of January; and if you do not tap when it runs, you lose just that much. This season, 1869, is an example. I have made but two and a half pounds to the tree; did not tap until the 24th of February. One of my neighbors tapped a few about the 20th of January, and he had made a pound to the tree when I tapped; and we had had several good runs before he tapped. The season of 1868 was an illustration of this principle. I tapped the 15th of February, and up to the 1st of April had made only about one pound and a half per tree. Most all took up their bushes at this time; but I knew that it had not run, and thought it must; and sure enough it did RUN, commencing the 6th of April and running almost every day until the 19th; one of the best runs I ever saw. Made 2½ lbs. to the tree during that time.

The trees should be tapped on the south or east side, and run freest when freezing nights and bright days alternate, and the thermometer ranges from 36 to 50 degrees during the day. I have tried every way of tapping, from cutting with a chisel or ax to boring with an inch augur, and prefer using a bit. As to the size, I think that a quarter-inch will run just as fast as.an inch hole. For tapping, I use Cook's patent lip bits, using the first time the three-eighths size, boring but half an inch deep. In order not to bore too deep, I take a piece of wood as long as the bit, generally paw-paw, and bore it through lengthwise, and cut off as much from one end as I wish to bore into the tree. Slipping this on my bit, I have an infallible guide. When I wish to freshen up, which is generally in ten or twelve days, I use the half-inch bit, running the old hole out and going one-fourth of an inch deeper. This is the same as fresh tapping, and much more effective than boring deeper, as the most of the sap runs in the grains next the bark, and in this time they will become filled so that they will not run much, and rimming them out removes the deposit formed. In a couple of weeks I rim them again with the five-eighths bit, going a quarter of an inch deeper, and if necessary, again with the six-eighths bit; when, at the close of the season, I have a hole only five-eighths or six-eighths of an inch large, and from one inch to one inch and a quarter deep. But, you say, this plan necessitates several sets of spouts. It requires but two; the ones for the three-eighths fit the four-eighths by driving a little further in, while the second set fit the five-eighth and six-eighth sizes.

I have never found anything in the line of sap spouts that just fill the bill, and have tried every kind that I have heard of. What I want is a spout that will protect the hole from the rays of the sun, and will carry *all* the sap to the bucket, so that none may be left in the tree to sour, and one that will fit any hole from three-eighths to six-eighths of an inch. The one that comes nearest to being what is wanted is one manufactured by C. C. Post, Waterbury, Vt. (15 cents enclosed to him will bring sample per return mail), and for once boring, either a half or five-eighths of an inch, they cannot be beat. Spouts that I use mostly are wooden ones, and, all things considered, they are cheapest, and with this method of tapping, the best. I used to think that soft pine was the best, but find that it will sour much sooner than those made of the common elder. Elder is a harder wood, and will not soak sap as readily as pine. Still, any wooden spout *will* soak sap, and if it is very warm weather it will sour, and then they will sour all the sap that runs through them, after which you cannot make a very good quality of sugar. You must scald your spouts as well as buckets after they are gathered in; before putting away, let them dry thoroughly. They should be sharpened with a uniform taper, and very blunt, so as to drive only through the bark, as most of the sap flows in the grains nearest the bark, and decreases toward the heart. Most all the sap runs within two inches of the bark.

In the spring of 1863 I tapped a tree two foot in diameter with an inch and a quarter augur, boring two inches deep. I bored with a seven-eighths inch bit through a pine stick four inches long, for a spout, and inside of this spout bored another hole two inches deep with the half-inch bit, and fitted a long spout to the inside hole, conducting the sap to a separate bucket. I did not get much from the inner spout, and that not as sweet as the other. In fact, I do not think that any sap circulates in the duramen or heart wood, but all in the alburnum or external wood. In small trees, or those of a foot or less in diameter, this may extend nearly through; but in large trees its thickness is from one to three inches, and boring deeper than this is useless. I usually put but one spout in a tree, because as much sap will run from one spout as more, if the spouts are within four or six inches of one another. Large trees it would do to put two buckets to, if put on opposite sides of the tree. But perhaps some would say "too much strain on the tree." This I do not believe. I believe that there is no perceptible injury to the growth of a tree in tapping it. The proper way to ascertain would be to select twenty trees of nearly equal size, ascertain their united circumference, tap ten for five years, leaving the others, and ascertain the growth as nearly as possible of each ten each year; then change, tap those not tapped the next five years, and compare results.

A tree that contains one hundred cubic feet of wood contains about fifty cubic feet of sap, not a twentieth part of which is drawn in the season. A hundred trees will usually make from three to five hundred weight of sugar, though in some instances I have known as high as eight hundred being made. Supposing four to be the average, and consulting the chemist, we find that sugar and woody fibre are *isomeric* bodies; that is, they consist of the *same* elements, united together in the *same proportions;* hence we have subtracted but four pounds of wood from the tree—a quantity that, in a tree of a ton weight, would be hardly noticed—and if an experiment could be *accurately* made, the result would not be far from this; that is, we have decreased the growth of the tree in wood to the amount of sugar made. The most injury results in the places tapped, but when *they* grow over in a single season, this damage is trifling. Trees standing in the open space, with large, bushy tops and short trunks, yield the most and the best sap, the soil the trees stand in, and its capacity for retaining water, being equal. The wetter the soil the poorer the sap.

One pail full of sap will usually make about one-half pound of sugar, some more and some less. Never allow the sap to stand in the pails more than twenty-four hours; gather every day, if but a half dozen pails full in the whole bush, as a short time standing, if it *does not sour*, will injure the quality of your sugar. The fresher when boiled, the nicer the sugar. In gathering, whenever you notice a white sediment on the bottom of the pail, turn out all the sap except about an inch in depth, then, with your hand, wash the bottom of the bucket until it is all removed. If your boiling capacity is not sufficient to boil as fast as the bush will run, use ice in your sap, and, to have it handy, put a load or two near the sugar house during the winter, covering it with chaff or saw-dust. I have found a load so placed worth in the course of the season many dollars, as the sap will not sour as long as there is ice in it.

Syrup down at least once each day. I have a kettle back of my pan, in the same arch, for this purpose, dipping from the pan as often as necessary. The syrup should be boiled down so that it will drop from the edge of a dipper in broad flakes, like strained honey, when it is ready to dip out. Strain into a clean cask, kept for the purpose. It should then stand twenty-four hours to settle; then turn it off carefully from the settlings, into your sugaring-off kettle; rinse the cask with boiling sap, turning the rinsing into your syruping-off kettle. To each gallon of syrup add one egg, well beaten; place it over a slow fire, and as soon as it boils up remove it from the fire, letting it stand a minute or so, and the scum will all be at the top; skim thoroughly, as the quality and beauty of your sugar depend on thoroughly cleansing it of all extraneous matter. Return to the fire, and as long as any dark-colored scum rises, skim it off. Do not throw away your skimmings, but preserve them until your pail is full; then put them in your syruping-off kettle, adding four pails full of cold sap; when it comes to the boiling point skim off all scum that rises; these second skimmings pour into a strainer (which should be made of thin cotton cloth), and hang up to drain. A pail full of skimmings, served in this manner, will make from fifteen to eighteen pounds of sugar; and the yield of the bush depends on saving all.

When there is a prospect that sap will run all night, just at night go around the bush and empty the fastest running trees into those that do not run so fast, and at daylight next morning start the gathering tank, gathering only those that are full or nearly so, as a great deal is wasted by being allowed to run over at such times.

Having your syrup cleansed, keep a good fire until done; there is no danger of burning until the water is all boiled out. There are several methods of ascertaining when done; mine is as follows: take a common wire and make a loop in one end of the size of a nickel cent; dip it into the sugar and withdraw; blow through the loop, and when it will ribbon off five or six feet it is done. It will ribbon a foot or two before done. Remove from the fire, and if you wish it in the form of common sugar, stir until cold; if in cakes, stir a few minutes and dip into your dishes—the most covenient size for which I have found to be a foot long, four inches wide at top, three at bottom, and four deep. This makes them handy for handling and shipping; packing closely, and not liable to break. If you wish to drain it, take from the fire as soon as it commences to ribbon; stir until nearly cold; dip into a strainer, and hang it up to drain. If properly treated, it will be nearly as white as loaf sugar.

I cake considerable in patty pans for retailing. To cake this way, after you have cleansed your sirup, dip all out but about a gallon, and when this is done dip it out into a pan, dipping another gallon into the sugaring-off kettle. Stir that done, until it commences to grain; then dip into your patty pans, using a spoon that holds just two ounces; it then takes just eight to weigh a pound. These are then sold by the piece or hundred to the grocers; price from three dollars to four dollars per hundred. By the time that you have one batch caked, another is ready to dip out. Your sugaring-off kettle should be scoured with a soft brick or sand stone at least every time you sugar off, as there is a sediment which is deposited upon the bottom of the kettle of the appearance of porcelain, and after the kettle has become thoroughly coated with this substance your sugar will not grain well. The siruping-off kettle also requires scouring at least once each five or six days. Put no salt, grease or any other matter into your sirup to keep it from boiling over. If it boils too hard pour a little cold sap in, or throw some water on your fire; but put nothing into the syrup, as any foreign substance will discolor the sugar, and above all cleanliness is indispensable to good results. Every vessel used should be entirely free from all dirt, and if convenient the buckets should be covered, to keep out snow, rain, &c., as eternal vigilance against dirt is the price of good sugar.

The maple is easily propagated, and is perhaps indigenous to our whole State; and if any one has none, all that is necessary is to procure a supply of the seed and plant them in the fall, in drills a foot apart, covering a half inch with soil, and mulching during the winter with leaves or straw. In the spring remove the mulch and keep weeds out. Transplant at three years old.

O. BURRAS.

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DEEP CULTURE IN RELATION TO THE RETENTION OF MOISTURE IN ARABLE LAND.

In the paper in last week's Farmer, entitled "The Season and its Labors," special and pointed attention was drawn to the fact that a very great deal of land is not ploughed in the proper sense of the term—that is, it is merely turned over and nothing more; and allusion was made to the fact that this probably arose from so many being afraid to plough deep. We shall in a future article go more fully into a consideration of the advantages obtainable by carrying out deep land culture systematically; meanwhile we would here draw attention to one advantage which can be obtained, which is often overlooked, but which, nevertheless, is of the highest importance—namely, the "retention of moisture in arable land during drought." To this subject the experience of the last season gives marked prominence; and, although that is generally spoken of as "exceptional"—for aught we know—it may be repeated in the season which is next to come. But, be this as it may, the subject carries with it so many suggestive considerations that it is worth while to enter upon it as fully as the space at our disposal will permit.

No person who is in the least versed in agriculture can have failed to observe that the properties and produce of soils are very much regulated and determined by the quantity of moisture in them. All soils are capable of holding more or less water in their interstitial spaces, and by adhesion to their particles, their several capacities depending as much upon their mechanical texture as upon the materials that enter into their composition. Clay soils in drought become hard, firm, and adhesive, lumping so much into clods that common implements cannot pulverize them; but when drenched with rain they become unctuous, mortarry, and tough, and to such a degree that tillage is impeded.

The atmosphere as well as the soil contains variable quantities of water, according to the varying conditions of the ærial ocean. It is ever imparting moisture to or receiving moisture from the soil, either by the process of evaporation or precipitation in the form of dew or rain. The quantity of aqueous vapor floating in our atmosphere, even when it cannot be pronounced humid, is almost incredible. In its normal condition it has been estimated to amount to a quarter of a million of gallons over each acre. Over a column of mercury, 30 inches, it exerts a pressure of forty-four decimal parts of an inch, which quantity (assuming its specific gravity to be identified with the atmosphere) would, on condensation, cover the surface of the earth to the depth of nearly six inches. In soils, say one foot deep, as distinguished from the subsoil, of a medium description, containing 20 per cent. of water, the water, if separated and placed on an impervious plain surface, would cover it to the depth of three inches. This may be about the medium amount in land after the March winds have dried the superabundant rains and snows of winter; but in the generality of soils it is not very palpable, does not show itself, for this is much in excess of what would be believed by many.

Besides the important part that evaporation plays in relation to the moisture in the soil, much water passes downward by filtration through the soil. The quantities that leave the soil by each process respectively are very indeterminate, varying very much according to the season of the year, the soil and subsoil, situation, and hygrometric state of the atmosphere. Evaporation during May, June, July and August exerts its maximum influence when the rain-fall is at a minimum. During these months very little water descends into the subsoil, or passes away by drainage, for the drains, as a rule, discharge little or no water then. At all periods we can determine the rain-fall, and also, approximately, the deposit of dew; but the amount of evaporation during any given period cannot be resolved very determinately.

Here, at the very outset, we meet a difficulty in assigning names to the soils that come under our proof tests; for, indeed, most of the attempts hitherto made, to give an intelligible classification, have proved unsatisfactory, and the next thing to an entire failure. Perhaps the nice shades of difference in the composition and texture of soils may render precision in this—the very alphabet of agriculture—unattainable. The epithet a "clay soil" conveys as precise an idea to the people in localities widely separated as the name of any other particular kind or class of soil; yet if clay is mentioned before a meeting of farmers drawn together from different counties—each would recall the idea of the soils of the same denomination that he has seen. One is familiar with clays of the most barren kind, and another would understand by the same phrase the most fertile of soils, while a third attaches to the term clay the same idea that is conveyed by the word "earth" in some parts of the United Kingdom. To classify soils according to the preponderating ingredients in their composition, as ascertained by chemical analysis, will not do, as any person will be convinced if he examine a series of soil analyses. It may suffice to state, on this point, that we have named soils in the way that seems to receive general acceptance, namely, according to *what they appear to be.*

Our experiments with soils in relation to moisture were begun in 1855, and as an illustration we shall give the outlines of our procedure during the summer of that year. Having occupied a light thin soil on a gravelly subsoil, that rested on the old red sand-stone, with a small annual rain-fall in the locality, the means and methods calculated to retain moisture in the soil forced themselves on our consideration. Our trials, however, were not confined to the dry gravelly soils referred to, but embraced ground differing materially from the foregoing. It is proper to state, also, that the methods we tried, to counteract the injurious effects of a dry climate and a period of drought, were not confined to those we shall hereafter enumerate; and they were undertaken to ascertain how much moisture was retained in the soil by the several methods pursued. We thus could judge of the effectiveness of our plans, not merely by the apparent improvement in the crops cultivated, but also by the increased amount of water retained in the soil. March closed that year without a permissible state of soil for spring sowing, fourteen days having been more or less wet, and the aggregate precipitation measured 3.3-10th inches in the rain-gauge. April was marked by only three partially wet days, and four-tenths of an inch of rain. At the beginning of May there was a mean of 14 per cent. of water in the soil. The parching arctic winds from the eastern points of the compass prevailed on 15 days of May, and neutralized the effect of the precipitation of the month, which amounted to 1½ inches. June also brought an inch and a half of rain, with a pretty high temperature. July was parching without rain till the 14th day, when the crops were languishing and earing in a stunted form. At this date the earth, from two fields of growing oats, only held 8½ per cent. of water, and from a turnip field of a similar soil there was 11¾ per cent. Showers, measuring in the aggregate one inch and a quarter, fell on the 15th and four following days; three sunny days succeeded, when one of the oat fields that had been subsoiled and partially drained gave 11¼ per cent. moisture, and the other 10½, while the turnip field still retained the highest per cent., namely, 12¾. In the concluding days of July, one inch and fifteen decimal parts of an inch fell. On the 2d day of August the several fields were again tested for moisture—the subsoiled one gave 11 per cent., the other oat field 10 per cent., and the turnip field 14⅓ per cent. Experiments in subsequent years brought out similar results.

The fields of the above experiments went by the name of "clay soils," with retentive subsoils. Till drained and subsoiled, or deep ploughed, they were esteemed poor and rather stiff, with a close subsoil and redundance of water. In these determinations the *modus operandi* was simple and easily manipulated. Estimating the soil at eight inches deep, we took a portion of earth (holding what was a mean amount of water), four inches below the surface; it was then weighed, dried at 212° Fahrenheit, and again weighed, the loss giving the percentage of water. These quantities of water in the soil may be better understood, when it is explained that 40 per cent. saturated these soils, and 20 per cent. formed a tolerably dry seed-bed for grain, and a suitable tilth for harrowing in the seed.

We have referred to the foregoing matters because they have a direct bearing on the subject of this paper, and for the purpose of making some of the points involved more explicit. That a sufficiency of moisture for the requirements of the crop is a matter of first importance none will deny. In short, moisture in the soil constitutes the essence of the vegetative strength of the ground for the season, which, when once dissipated, is not often recovered during the period of the growth of cereals in weak soils and dry climates. The first rains, after a protracted heat and drought, seem rather to make things worse than better, for the most parched spots extend in area and the sickly plants on and around them languish and wither still more.

We had recourse to several methods for preserving the moisture in the soil, but it is to only two of those that we shall for the present draw attention, reserving the others to be given in a succeeding paper. The two we give now are, first, deep culture of the soil by deep digging, trenching, or subsoil ploughing and pulverizing of the soil, these having been specially referred to in our opening remarks.

Deep digging, trenching, or subsoil ploughing are means for preserving the moisture in the soil during heat and drought. There are not wanting many evidences that the several acts of husbandry stated under this head are advantageous on every description of land, even the most water-logged fields. But drainage is a *sine quo non* in such fields, an operation that has been descriptively defined by Major M'Inroy as "undergound irrigation." "I consider," says he, "the most perfect system to be that which allows air and water to pass freely through the soil with their dissolving and fertilizing properties." Previous to draining and deep stirring chemical action is very much confined to one stratum of soil—namely, where the air is neither excluded nor free, and where it is neither dry nor wet (speaking in common-place words). Subsequently the laws of composition and decomposition have full play, and their effects are diffused throughout the whole mass of soil. In an essay published several years since (for which the Marquis of Tweeddale offered a prize), it was said "that in every instance drainage gave a decided advantage in the in crease of temperature, except only in summer, when a heavy fall of rain was found to lower the temperature of drained land more than undrained," which is evidently an advantage to a hot parched soil.

The writer subsoiled nearly 100 acres of a light, thin, incoherent soil, consisting of a small portion of black earth, with gravel and sand resting on a gravelly open subsoil. The subsoil plow, which was drawn by two horses in the track of the common plough, stirred the ground to the depth of 12 or 14 inches. The weak point of the land so treated was its dryness, for even moderate heat and drought scorched whatever crops were grown; but we found the process beneficial, the crops more abundant, and less liable to suffer from an arid atmosphere. The rain-water did not pass so rapidly away, and we ascribe this to the subsoil ploughing shutting up the grooves and channels through which the water had descended for untold ages.

For this explanation we have been several times taken to task by intelligent agriculturists, who affirmed that subsoiling opens pores and interstitial places for the more rapid descent of water. Such, we believe, is the result of the operation in retentive bottoms.

The pulverizing of the soil also contributes to the retention of moisture. We were in this point a follower of Jethro Tull, and it was the perusal of his writings that set us to work. He pronounced the opinion that pulverization was the one great idea of successful farming. When large cavities abound in land, plants suffer more in dry weather than in land with minute pores. This proposition seems to be self evident, but it has often been disputed, as contravening a law of capillary action, that the ascent of water is in the inverse proportion of the diameter of the tube. Now, it cannot be denied that a fine division of the soil is analagous to small capillary tubes; but one fact is fairly overlooked in this reasoning, namely, that the fine small particles of soils compacted together excluded largely the air atoms, and thus prevent the full evaporative powers that would otherwise rule and operate. It is said that in digging a hole in the soil in dry weather, pounding down the excavated earth, and afterward returning it to the hole, more moisture is absorbed and retained than in the surrounding ground. This process we have brought to the proof, and found its truth amply verified in soils holding something less than their normal quantity of water, but in cases where moisture was redundant, it was otherwise.

In the prevailing plan of draining soft plats forty or fifty years ago, we have undoubted evidence of the powerful action of evaporation. The shallow stone drains of 18 inches proved an entire failure, so far as the removal of the surplus water was concerned. The great law of gravitation being counteracted by capillary, the soft flats remained nearly as moist as ever.—*Country Gentlemen's Magazine, London.*

ON THE MANAGEMENT OF HORSES' FEET.

BY JOSEPH GAMGEE, SEN.

That the British Isles produce the best horses in the world, for all purposes, is a proposition which I shall not for a moment question. If we examine the causes upon which this pre-eminence depends, we shall find that, whilst it is due to a certain extent to the innate love of horses on the part of the people, which has ever led them to cultivate with care the breeds which we possess, it depends in the main upon the climate and soil of our country.

Notwithstanding these advantages to which this innate stamina is due, and the increasing interest with which the national wealth, spirit of commercial enterprise, and the popularity of field sports, has invested the subject of horse-breeding; we are compelled to acknowledge that, out of all proportion, more lame and feebly-footed horses are to be found in England than in any other country. This is assuredly an evil urgently calling for remedy, as it is due to preventable causes, and is, therefore, a discredit to the enlightenment of a great nation.

As the first step towards inquiry into the causes which lie at the root of the evil, I submit one, and which is the parent of other injurious influences: it is the notion, commonly entertained, that moisture is necessary to the condition of horses' feet. Let us see in what manner the feet of horses are affected by continued exposure to the influence of wet—to their being kept soaked in wet? The main question may with advantage be considered under the following three divisions:—1st, as it applies to the breeding and rearing of horses; 2d, in its bearings on the ordinary management of those employed for all kinds of work; and 3d, as to the wisdom or non-advisability of the soaking process applied to horses' feet in the treatment of cases of lameness.

In considering the first section of my subject, some comparative observations may help to establish clear notions on the function of hoofs in general, and that of the horse in particular. Why nature has endowed some quadrupeds with hoofs and others not, and why the horse is gifted with the most elaborate and powerful, are questions pertinent to this subject.

All animals inhabiting the land are endowed with feet, furnished with nails, claws, or hoofs; and however different they may at first sight appear, these are merely modifications of a common structure, so as to suit it to the performance of functions adapted to the conditions and requirements of each species of animal. Strength, hardness, toughness, or want of brittleness, are the properties which are required by all the modifications of the one structure under consideration, and are accordingly equally characteristic of a hoof, a nail, and a claw. That great differences in form should exist between them can only appear natural when we remember that, whilst nearly all these nails, hoofs, and claws are in varying degrees essential for different offices: in the lion, eagle, &c., they constitute weapons of defence and aggression. Regarding now, the undivided hoof of the horse, and the cloven foot of the ox and other tribes, as but modifications of nails and claws common to a large section of the animal kingdom, if we examine the special circumstances under which these different animals are placed, we shall arrive at the conclusion that all quadrupeds endowed with hoofs are destined to inhabit and render service on firm, dry surfaces of the earth; each species having its structures suited to the circumstances under which it is placed. Thus we find the goat and the chamois gathering the spare herbage on the high mountain ridges, the sheep feeding and enjoying health on the evergreen slopes of a lower level, whilst the fertile hill and dale—the selected abodes of people—affords the most suitable conditions for the subsistence of the horse, and the display of his unrivalled qualities for rendering service to man. The ox we find distributed over even a larger space of the earth's surface than the horse; it descends to the low swampy grounds, and feeds on the luxurient grasses which abound there, ranges over among plains, and is found occupying the mountainous districts among the stunted brushwood and fir-trees. The camel affords an instance of infinite wisdom in the adaptation of the foot to special requirements; the cushion with which its foot is provided makes that animal superior to every other for traveling over the drifting sands of the desert. All these various species of animals endowed with hoofs, possess one characteristic feature in common—their cannon bones—corresponding to the analagous bones of the hand and foot of man, and which in these quadrupeds extend from the knee and hock to the pastern, are very lengthy; and another characteristic is the small size of their feet compared to the weight of these animals respectively. Examining a little further, we see that these characteristics are most marked in the speedy races, and in individuals of the same species whose general formation adapts them for great feats of velocity; notably in the Arabian and English blood-horse, in the deer, in the mountain goat, &c. The foot proper in each of these consists of the last phalanx or segment of the limb, and is so constituted as to have more strength concentrated into a small compass than is the case with the long and more extended foot of other orders. Comparing the ostrich with the swan, we find a small, energetic foot associated with length of leverage in the swift, whilst short legs and flat, broad feet are the characteristic features of those animals designed either for swimming or walking on soft, muddy ground. It is the length of the levers of the metacarpal and metatarsal regions in the horse, deer, &c., acting on the admirably adapted foot, which gives speed, power, and the means for sustained exertion. The foot, besides its strong, bony internal framework, has additionally, as its outer encasement, the hoof; and in connexion with these—the foot's inner and outer supports (the bony and the horny)—every yielding structure acts; and from this most perfect organization results indescribable strength, unvarying precision, and freedom from concussion.

Inquiring now into the conditions requisite for the proper action of these parts, we shall find that, in order to fulfil its function, the hoof must be firm, tough, and free from weakness through any cause. Custom has, however, changed these conditions, and has caused horses to be kept with their wet feet, as if this were favorable to growth and efficiency, all sight being lost of the fact that under such conditions horses are produced with weak feet, becoming unsound when slightly disturbing causes come into operation, such as work, shoeing, &c., supplies.

The customs which doom the horse to exposure to wet and filth over his hoofs from foalhood, and during his working career to soft and thin soles, render the hoof altogether incapable of performing its office; and instead of being endowed with that complete stability which it requires, it yields to every force.

In the oldest treatise which has been transmitted to us on the horse and his management, we are told that "the first part to be attended to is the foot. The same attention which is given to supply a horse with food, and to let him have due exercise, that he may be healthy and strong, is also requisite to be observed in order to keep his feet in proper condition. Moist, *smooth* or *flat* floors will injure even those hoofs which are by nature good and sound" (Xenophon).

These maxims with all that composes the treatise of the Athenian philosopher were the horseman's guide for ages; but where we find them set at naught, unsound, unsafe, and worthless horses are the result. Earl Pembroke points out in unmistakable language, in his work on "Military Equitation," 1761, the consequences which happen through the opposite modes of managing horses' feet to that above directed. The noble author says, "that the common practice of stopping horses' feet with dung is a very bad one, for the dung contains a rotting quality in it. They totally pare away and lay bare the inside of the animal's foot, which must cause narrow heels, because the hard outside of the foot will of course press in when it finds no resistance, the inside (sole) being cut away."

' It is still regrettable that the aphorisms of so great an authority as the noble writer were not attended to, when forty years afterwards, attempts were made to improve the whole state of things by the establishment of our Veterinary College.

As a necessary consequence of exposure to wet, there results a nearly total loss of the natural elasticity of the horn, with bulging of the sole, absorption and flattening of the coffin-bone, and a variety of other changes, until the horse becomes a victim to continued pain, and a source of loss, instead of profit, to the proprietor. Feet which have been exposed to the influence of a wet, soft soil, and of which not merely the hoof, but the bones also, become flat, soft, and spongy, may by proper management be restored to a state of freedom from pain and lameness; although it is to be remarked that perfect structure and action cannot be restored where deterioration has long prevailed and deformity been protracted. The soft, weak hoof with its depressed sole and lateral distortions, only exhibits the counterpart of a flattened and distorted coffin-bone. We can afford relief and redeem properly in part, but prevention is the better plan.

A standard may be rationally laid down for the management of horses' feet, not taking account of shoeing, which is too important and vast a subject to be treated in an incidental or subordinate way. Horses should be bred on land drained and variable in extent and surface, that ample space be secured, with firm, resisting foothold, for developing the form and strength of feet; and thus, feeding being conformably attended to, the best horses are obtained; for though we sometimes see a horse bred with quality, it is rare to find other parts of the system good when the feet are bad.

Colts and young horses, of any age, unshod, should have feet so perfect in form, and firm in texture, that they should be able to make a show and display their best action on a hard level road, without the requirement of artificial protection to their feet. Nor will horses in such case stumble or require knee-caps for protection.

Foot-rot in sheep is a disease entirely due to causes, by which crippled useless horses are produced; and prevention and cure in one case is, on principle, nay, practically, the same as in the other.

The case of a race horse, which happened a few years ago, is worthy of record. The subject, a first favorite for the Doncaster St. Leger, became, while under preparation for that race, a source of anxiety to his owner and trainer, owing to the state of his feet and hardness of the ground. Extraordinary attention was paid, his feet were kept constantly wet, and to such an extent was it carried, that a boy, or several of them, were in attendance to go into the horse's box, from time to time during the night, to apply cold water to the horse's feet. The September day came, and the horse won the great stakes. Of course the feat was regarded as a great victory, due to cold water; while, in fact, the colt was so much superior to his competitors that for the time his chance had not been destroyed; besides, it is most probable that every horse that ran against the winner of that important race had been treated on the foot-weakening plan, the difference, therefore, between the quantity of wet applied to their feet respectively being only one of degree.

But weakening had so far done its work that by continuing the process, the coffin bones of both fore feet were undergoing rapid change. Absorption of their sharp margins was being effected in order to make a flat surface, which was productive of less pain than the deep strong forms, so effective to strength, speed, and all natural endowments of the limb, but productive of pain under the circumstances.

The St. Leger was won, and the horse's racing career closed, and progressively his feet to the least initiated, gave evidence of confirmed disease. Meanwhile he became a favorite stallion, his early produce confirmed the favorable opinion of the public; and while the sons of this foot ruined horse were winning the Derby and St. Leger, he was doomed to perpetual suffering beyond the imagination of man to conceive.

With different management, that horse might have been in training and winning great prizes at seven or eight years old, and then have begun a career—as stallion—free from pain, in all his fine form and beauty, with years extended to his life, instead of being the most miserable picture of cruelty to behold.

The hoofs of horses and the nails of animals in general, are endowed with a quick and a dead part, and such an intimate blending of structure is there between the inner horn of the hoof and the fibrous texture which underlays it, that one fails to discover any line of demarcation which can be assigned as that where sensibility terminates. One of the modes of connection of the hoof with adjacent parts, is by interlaying plates—laminæ—constituted of horn structure as belonging to the hoof, and of the reticular tissue, blood-vessels, nerves, etc., proceeding from the common sensitive envelope. Part of the adapting surfaces, the sole and frog, and around the coronet are apparently smooth; but by close examination it is found that the means of connection at these parts is by filaments as fine as down, consisting also of blood-vessels and nerve matter, penetrating the horn substance; and so intimate and strong is the connection that great force is required to detach any part of the hoof until after it has been subjected to decomposition. In the process of detaching, however, that which I am describing may be readily seen.

Throughout the connecting medium of the hoof a radius is established, which is endowed with most acute sensibility, and is amply supplied with the material for growth and repair over that medium. Blood is furnished, and a limpid, colorless fluid is passed on into the sbstance of the hoof; but beyond the range to which red blood globules pass, that transparent secretion is diffused through the entire substance of the horn, and is ultimately passed off in the form of invisible vapor.

The foregoing proposition may be verified by the following test: If a horse is made to stand on a flat stone floor after taking off his shoes and seeing that his feet be clean and dry, and the floor equally so, and be allowed to stand about a minute, it will be found on moving him that four imprints of his feet will be left on the floor, due to condensation of vapor exhaled from the surface of the foot.

The incident is analogous to that which occurs when we take hold of a piece of polished steel, or touch a mirror in cold weather, in which case the prints of our fingers are left on the steel or glass by similar vapor issuing from the surface of the skin. Therefore, the horse's hoof is not exceptional, but subject to common natural laws. Blood is required for the growth of new horn, which in successive order is moving on, outwards and forward, becoming firm in texture and fitted for its object.

Another way of observing these phenomena, less inviting than the example given, but one, I regret to state, for which constant opportunity is afforded, is as follows: In the first act of shoeing, after taking off the old shoe, the farrier proceeds to pare the foot, in doing which he is either following instructions or acting according to custom long in vogue. As slice after slice is pared from the sole—and the workman's injunctions in many cases are that he should thin it until it yields under pressure of the thumb—the horn will be found moist; and as the thinning operation is continued, the transparent juice will be apparent on the surface of the hoof, issuing from its pores like sweat, and if the finger be passed over the newly cut surface, a damp streak will be visible, in which case any one may write his initials on the horse's hoof with the moisture drawn from it. By paring on still further, instead of colorless fluid, red blood will issue in all its integral parts, and then a name may be written on the sole of the foot in blood. There is yet another stage, which, by courtesy, is called an operation, consisting of drawing blood by pints and quarts from the sole of the horse's foot, in which act, all the paring thus far described being accomplished, the expert hand revolves his drawing knife on to its hooked point, and, with a thrust downwards and forwards in a semicircular direction, a shaft is sunk through the remainder of the sole, and blood flows—in the act a network of blood-vessels and nerves is divided. I am not adducing these examples of practice to remark on the monstrous cruelty or its tolerance, but to extract material as a lesson on the manner of the circulation of blood, and a secretion from it through the hoof.

Weakening of the hoof by any process whatever, especially by the prevalent ways of keeping it in constant contact with wet and by paring, is to be regarded as the primary cause of one of the greatest miseries of our age—lameness of horses. Not only does the procedure betray ignorance and indifference on the subject, and therefore is the more regrettable, and less hopeful of early recourse to remedy, but the weak-footed horse is thereafter affected by relatively slight additional causes.

Against my theory of horses' hoofs being destined for action on firm, and, if required, hard ground, and of their being only in a fit state to bear weight and exertion when free from moisture imbibed from without, it may be argued, that their condition of existence necessitates exposure to wet, and that even the dew on the grass keeps for the time the surface of the hoof moist; but let all conditions be taken into account, and then the theory I have advanced will be found consistent, and the doctrine sound according to all experience.

When men speak of natural conditions of horses, it is commonly found, if rightly viewed, that that which is indicated is diametrically the opposite of natural; they turn a horse into an open field, and seeing that there is grass and water, console themselves in the belief that the animal so confined is enjoying its natural freedom.

Men authorized to be the teachers of those of future generations, adopt as their system the plan of placing horses, whether ill or well, and however differently they may have been previously managed, in sheds with nothing but the tiled roof for a covering, and one or more sides being left open. Nay, in some instances we have seen the roof supported on pillars, and the animals exposed to the winds from the four points of the compass; and by a strange perversion of sense, this, too, is called natural. The horse, in the only condition ever seen by us, that of domestication, is so completely subordinate to control, that the case of only a few other animals is comparable in the study of its instincts; yet comparisons help, and are necessary for instruction.

Wild animals have their feeding grounds and abodes more or less distant from each other, according to requirements, and the capability of the order to travel in search of food. The deer holds to its mountain or forest retreat, and goes forth to the valley for food; the hare also goes from her home, and even into the cottager's garden, to satisfy her appetite; but when the sportsmen starts either the fox from his kennel or the hare from her form, they are cleaner and drier than we should know how to keep either under artificial custody; and if their footsteps be tracked while they are running at full speed, the deep, sharp imprints of their toe nails will be obvious in every step; and to the firmness and strength of those nails their speed and lasting power is in great measure due.

Returning to the consideration of the horse, which is altogether dependent on the understanding and discretion of its master for tolerable existence, if turned on to a bleak bog at one season, and into a fold-yard, ankle deep with wet dung, during another, he is helpless; a five-barred gate, and posts and rails, mark the boundary of his confinement.

Wet and dryness are relative conditions. The question involved is one of degree. Horses' hoofs are not penetrated by wet until after some time of exposure to it, when they are weakened, and under exertion alterations ensue, which incapacitates the whole foot for its natural functions. Men can work for many hours together in the rain, and their hands not be affected, but very different is the case of washerwomen's hands, which, after many hours' immersion, become intolerant of water; the sense of touch for the time is impaired, and the nails fail to fulfil their office in giving support to the finger point.—*Country Gentleman's Magazine.*

INFLUENCE OF RAILWAYS UPON AGRICULTURE.

BY MR. J. K. FOWLER.

The author, in his introductory remarks, said that "when he alluded to increase of rents and other matters of a like nature, consequent on the introduction of lines of railway, he should studiously avoid naming the localities, as he well knew the sensitiveness of his brother farmers on all such things."

TRAVELING IN THE OLDEN TIME.

In the seventeenth century the inhabitants of London were, for almost every practical purpose, "further from Reading than they are now from Edinburgh, and further from Edinburgh than they are now from Vienna." And in a very interesting book, written by a gentleman I knew well, the late Sir Cusack Roney, called "Rambles on Railways," he begins by saying, "In 1672 the course of post between London and Edinburgh was two months; one month going with a letter, and one month coming back with the answer. Ninety years afterward the one stage-coach between London and Edinburgh started once a month from each city; but in nine-tenths of a century speed had been accelerated. It only took a fortnight on the road in each direction. Seventy-five years afterward, that is in 1837—the year before any portion of railway between the two capitals were opened for traffic—the mail coach completed its 400 miles in 42 hours, or 1 day 18 hours. Now-a-days, our limited mail (one of the few 'limited' associations of very modern date that has not come to grief) is only 10½ hours." So that a letter might be written and a reply obtained in less than a day and night.

COMMENCEMENT OF THE PRESENT CENTURY.

However, I shall not take you back to those times, but will begin by a few remarks upon the beginning of the present century. At that time the means of transit through the country were very meagre indeed. The main thoroughfares were in tolerable order, and as time wore on turnpike roads were formed, and the great line of communication became noted throughout Europe. Many I now see around me can remember with pride the splendidly-appointed four-horse coaches, the slashing mails, the carriages of the nobility and gentry, the old yellow post-chaise, and the modest gig, thronging the great lines of road, and rendering a journey from town to town cheerful and pleasing; but along with these were the eight-horse broad-wheeled wagons, heavily laden with manufactured goods and the lighter productions of the land, such as butter, cheese and poultry; and the market wagon of the farmer, drawing his ten quarters of corn, with four horses, fifteen or twenty miles to the market town, or to the water-mill of the district. Only a few laborers would be seen trudging along; but the farmer himself, on his useful hackney, jogging along the road, and his custom of rather late hours at market, was a standing joke among his fellows. The country roads were in a deplorable state; in some districts the want of material rendered them almost impassable, and the difficulties of carriage for all sorts of agricultural produce rendered it troublesome and expensive to get to market; but for all these difficulties agriculture improved, and with improved system of cultivation came better roads, and greater facilities for disposal of produce.

AGRICULTURE THIRTY YEARS AGO.

In addition to the state of the roads, I will briefly allude to the state of agriculture some thirty-five years ago, previous to the introduction of railways. Agriculture, as I have previously remarked, had been more than a century progressing rapidly in the kingdom, and the great revolutionary war in France tended to enhance the value of agricultural produce to a very great extent, and many thousands of acres were put under the plow, and I believe in many districts large fortunes were made; distressed times came, the war ceased, prices fell largely, pauperism increased fearfully, and the money panics of 1819 and 1825 brought ruin and dismay on many a happy and prosperous home. In the year 1830 greater distress prevailed, large numbers of the laboring population were out of work, incendiarism and the "Swing" riots spread over the land; the work-houses were filled to overflowing, poor's-rates increased to an alarming extent; many thousands of acres which had been put under the plow were allowed to go out of cultivation, and "fell down," as it was called, into poor pasture, and the new Poor law was the result of this combination of circumstances. I am not now going to discuss the political causes which led to this state of things, but I merely relate the facts which occurred. The state of the agricultural population at this time was at a very low ebb. I was then a school-boy, but I remember that in 1833 nearly every farm in the parish of Aylesbury was in the hands of the landlord, and many of the finest farms on the Duke of Bedford's Bedfordshire estates were out of occupation. Rents in our district were as low as 20s. to 27s. per acre, the wages of the laborer were 8s. to 9s. per week, and the poor's-rate 16s. in the £, with two labor-rates of 1s. 6d. each, making nearly 20s. in the £, and I regret to say this was no exceptional case.

INTRODUCTION OF RAILWAYS.

In the year 1833–4, the Grand Junction and the London and Birmingham Railways were commenced; many other lines followed; the superabundant agricultural labor was draughted off into these new channels, and the plethora of stalwart unemployed country labor found a vent, and the new Poor-law, the application of which at one time threatened to produce a revolution, began more quietly to be established. Here may well be said was one of the "influences of railways upon agriculture." It will simply be impossible for me, without tiring your patience, to go into all the various details of how railways have influenced and are influencing agriculture, and you must pardon me for refusing to go into heavy statistics—all these are to be found in various railway returns, from animals into every district of the kingdom, besides large numbers sent abroad for the improvement of foreign herds. Surely railways have done something here for the "roast beef of Old England!" I find that Mr. Strafford left Euston Square this last September on a Monday evening, went down to Killhow in Cumberland, held three large sales of Shorthorns on three consecutive days, and was home again by the next Saturday morning. I don't know how much sleep he had, but he traveled over 700 miles. It is difficult to know how things were managed formerly; but I am informed on good authority that Lord Althorp, afterward Earl Spencer, engaged his bed at Rushyford Hotel in January to attend the Chilton sale the following autumn; and when George III. hired the noted bull Windsor, of Mr. R. Colling, he was nearly three weeks in getting him to Windsor; and the noted bull Duke of Northumberland and the Oxford cow and two calves, exhibited by the celebrated Tommy Bates, were sent by the Stockholm steamboat to London, then by canal-boat to Aylesbury, and thence by road to the first show of the Royal Agricultural Society of England at Oxford. It was a work of nearly three weeks to get them to and from the show, and the expenses were over £90, and the prizes won about £70; now they could be sent to the same place in twenty-four hours, and the cost there and back would be about £12. The statistics at the end will give you some idea of the numbers in consecutive years of stock exhibited, and of persons visiting the Royal Agricultural Society of England's meetings from their first show at Oxford in 1839. Most of the stock has been sent out and home chiefly by the railways; and hundreds of ardent lovers of Shorthorns, Herefords and Devons have been enabled to visit the most celebrated herds, and form the nucleus of fresh herds to give food for the people. One of my Shorthorn purchases at the Didmarton sale last spring was sent from Chippenham station at 11 A. M., and arrived by a very round-about way safely at my farm by 3.25 P. M. the same day, a distance of more than 100 miles. These facts show how railways influence opportunities for the breeding of cattle.

DEAD MEAT, POULTRY, ETC.

Having stated thus much upon live stock, and shown cursorily what railways have done for that portion of agriculture, I come to quite as important a function which they perform for carrying dead meat, poultry and other food for the people. It is incalculable in how many ways the feeding of the people is influenced by railways. It is not the province of this paper to go into the question of the transit of fish; but, as it bears upon the food of the people, to a certain extent it indirectly acts upon agricultural products. I shall merely say that salmon is sent now from the Scottish and Irish rivers almost alive, packed in ice, into the metropolis in less than twenty-four hours, and gives a splendid addition to our human feeding-stuffs to almost all classes of the people.

In my own inland town of Aylesbury we receive a daily supply of excellent fish from Great Grimsby. But if fish is important to us, what must be the supply of dead meat? I find by returns which I have before me that the London and Northwestern Railway brought upwards of 17,076 tons of dead meat into London alone during the first eleven months of the year 1867; and when it is known that splendid meat can now be sent from Aberdeen in thirty hours, and the mutton from Dartmoor and pork from Devonshire in fourteen hours, you will see again how railways influence agriculture. There is another branch of food for the people in which railways have played an active part—viz., poultry and eggs. The consumption of these articles of food is so enormous as to exceed belief. The Midland Railway, in the year 1867, brought 141 tons of eggs, and the Great Eastern alone brought 5,042 tons of poultry and game. But this is a mere fleabite in the course of the year; and from my own town it is no uncommon thing in the early spring months for the Aylesbury Railway to carry two or three tons weight of ducklings, butter and eggs up in one night to London; and it is stated that nearly £20,000 per annum for ducks is returned into the neighborhood of Aylesbury alone. There is another product in the land which has been made considerably more available for manufacturing purposes by railway—I mean wool. The establishment of wool fairs would have been but of little use to the farmers if railways had not enabled buyers to attend them. Now the great northern towns of Leeds, Dewsbury, Bradford, Cleckheaton and others, pour out their buyers into the midland fairs, and create a healty competition in this most valuable product with the buyers of the west of England; and in many instances the wool brought to the fairs one day was at the great centers of manufacture the next. There is another great agricultural product which must not be passed over—I mean vegetables for the early spring. From Cornwall and the extreme south and west counties, cauliflowers, early peas, potatoes, fruit, and all sorts of garden produce, are now grown and sent easily to market in as fresh a state as the market gardens near numerous railways, and in Board of Trade returns—but I will touch upon the most salient points.

TRANSIT OF PRODUCE.

First, then, as to transit of produce. Since the introduction of railways the hacknied motto of the free traders has been fully verified, of "buy in the cheapest and sell in the dearest market." In fact, the whole country has become one great market. As the giant brewers of Burton-on-Trent send their representatives to buy the choicest samples of barley throughout the land, and the energetic factors of the great northern towns have their agents in many of the southern counties to buy the choicest white wheats to mix with the coarser red wheats of Yorkshire and Lincolnshire, whilst the oats of Scotland and Ireland are now transported cheaply and easily to feed the thousands of horses engaged in the great metropolis. I know much of this is brought by sea, but railways influence the cost of transit. The potatoes of the moory soils of the north are also brought to London, and also into the great centers of the manufacturing districts. Whilst the hops of the famed southern counties are rapidly sent to every part of the kingdom, and the glories of Weyhill fair, with its long line of farmers' wagons on the hills of Hampshire, will, certainly, in a very short time, be no more, from the all-powerful influence of the iron road. I have thus rapidly glanced at the effects produced by railways on the arable districts of the kingdom, and if these effects have been great there, how much greater are they in the pastoral districts of the kingdom? In my own rich and fertile vale of Aylesbury, where the Hereford ox finds a genial home, and the North Devon revels in its rich green pastures, and the placid Shorthorn yields up her milky riches, the grazier of the vale can go to the western fairs of Hereford, Leominster or Kineton in half a day; buy his beasts, can see them put on the rail, and they are safely home the next morning; or he can meet them half way at various markets or fairs, and bring them home the same night. The same may be said of the half-bred sheep from Landsdown, near Bath, the west country Downs from Salisbury, the Shropshires from Shrewsbury, and even the prolific Norfolk ewes from Norwich Hill—all these are easily and readily transported from and into the various districts where they are required. In like manner the horse fairs of Horncastle, Lincoln, &c., and the Exmoor pony sales can now readily be reached by the railway. And here let me digress for a moment, to show how all were deceived about the demand for horses. The breed of horses was considered to be at an end when railways were introduced; but there is a greater necessity for them than ever, although I regret to say the stamp of horse prevalent thirty years ago is nearly gone; I mean the rare, old-fashioned wheel horse for a coach, or, as he was called, " a riding-post chayer "—a horse on short flat legs, with good shoulders, famous loins, head well up, and shortened tail, bending his knees up to his chin, and trotting along from ten to twelve miles an hour. Here railways seriously " influenced agriculture " by driving the breeding of this useful animal into that wretched three-parts-bred weed which now is seen in traps of all descriptions at our railway stations. Cart-horses are also increasing in demand, to carry the immense products of our manufacturing towns to the railway stations and seaports throughout the kingdom.

BREEDING OF CATTLE.

I now come to another most important manner in which railways have influenced agriculture—I mean the breeding of live stock, more especially Shorthorns; and if I will dwell for a moment on this matter, I hope I may be pardoned for so doing, as you all know my favorite hobby, and the same rules will apply to breeding all other stock. The first stimulus to breeding Shorthorns was given by Mr. John Day, traveling the country round with his celebrated " Durham ox," bred by Mr. Charles Colling, by the celebrated bull " Favourite." This ox was taken to nearly all parts of England—from the banks of the Tees, where he was bred—and was exhibited for several years, when he was slaughtered, weighing the enormous weight of 300 stones of 8 lb. This gave a great desire to obtain this breed, and a great sale took place in 1810 of Mr. Colling's stock. There was no other sale until 1818, by Mr. Robert Colling, and another in 1820; then a great gap till Mr. Mason's sale at Chilton in 1829; then Mr. Whitaker's in 1832, on till Mr. R Booth's at Studley in 1833; then the " Roses " in 1838; Mr. Wetherell then held several in 1841 and 1842, holding five in succession in as many days in the same locality, as it was difficult to get a company together. Mr. Strafford began in the autumn of 1848, by the great Fawsley sale of Kirklevington in 1850; J. Booth's at Killerby, 1852; Earl Ducie's at Tortworth in 1853; and now, during the last three years, he has sold from £30,000 to £40,000 and £50,000 worth of Shorthorns annually, averaging 1,000 head per annum. Here are, therefore, annually distributed an immense number of valuable food-producing stock, forming many centers of fresh breeding herds, and disseminating better London meat. I mention this as the rent of land has increased so enormously in Cornwall as to be almost incredible, and the laboring population have been greatly benefitted by opening up their country in this manner. Vegetables are sent from Cornwall as far as Newcastle-on-Tyne.

MILK.

No paper on this subject would be complete without alluding to the carriage of milk and other dairy produce, and I must question whether anything will influence agriculture more than the readiness with which railways now carry this product of the soil I find that last year the quantity of milk carried by the Great Eastern Railway into London amounted to 1,322,429 gallons, and by the Midland line 180,300 gallons; and this is but a very small portion, as I am unable to get the exact amount from other great lines into London. There is no doubt the outbreak of the cattle pleague first turned the attention of the people to the propriety of keeping cows in the country, and sending milk to London; but, necessarily, if there had been no railways this could not have been carried out. Not only has new milk found its way on to the tables of all classes in London and the other great towns, but the cream for the tables of the "upper ten thousand" is now safely carried without being churned into butter in transit. Another way in which even skim-milk is used is by the large biscuit factories, where the milk is required to be turned sour before it is used, and immense quantities are sent to Huntley and Palmer's (at Reading), and other great factories for this purpose. There is a very difficult problem to be solved by this sudden change of the produce of pasture land, as all the products of the land are now sent away, and nothing is left in the shape of means of making manure, as formerly. When butter was made and sent to market, large quantities of pigs were kept to eat the skim-milk, and quantities of meal were consumed, and famous bacon pigs were fatted on the land. I know that many landowners are beginning to make fresh agreements with tenants of grass land in the neighborhood of railways, so as to compel certain quantities of oil-cake to be consumed, or crushed bones and other manures to be drawn on to the land; and I think they will be perfectly justified in doing so. I have now gone through the chief products of the land, the cultivation and rearing of which have been much influenced by railways; and I could dilate more on all of them, but there is still so much to say that I must leave each of these matters to be treated on separately by other members at future meetings of the Club.

OTHER PRODUCTS.

I must now speak of the way in which agriculture is influenced by other products being made available for the improvement of that science. First, as to transit of coal: How much comfort has been brought to many a fireside of gentle and simple, by the introduction of railways into country districts! Rapidly the forests, woods and hedgerow timber trees are disappearing from the face of the land, and many districts formerly supplied with firewood are denuded of timber. Coal happily comes in to cheer the long winter evenings, and all trouble from loss of timber ceases. But coal really influences agriculture in a remarkable manner. What should we have done with our steam threshing machines, with our glorious steam cultivators, if we could not have had easy access to coal? Even the fact of making tiles for draining, and bricks for farm buildings, could not have been carried out if coal had not been brought just where it was wanted—namely, in the cold heavy clay land districts. I much question whether anything has more influenced agriculture than the facility with which coal can now be brought to all parts of the country by railway. Again, the great facilities of bringing artificial manures, guano, and the various feeding stuffs, oil cake, meal, and foreign corn, into the country, have vastly enabled the farmers to carry out those improved systems of agriculture so needed at the present time.

CARRIAGE OF FOOD.

I now come to a portion of my paper which, I think, you will say influences agriculture as much as any of the foregoing. A leading engineer of the present day said recently that "if a railway could be made through a country that would grow good grass, and other good crops, for £5,000 per mile, it would pay handsomely;" but I regret to say, and I say it with a feeling of great reluctance, as a railway director, that from the rapacity in general of land-owners and farmers, that any attempt to accomplish that fact would be fruitless. Surely, when all the advantages I have described are enjoyed by the land, the owners and tillers of the soil should be the very first, not only to welcome the promoters, but should find the land at agricultural value, and aid in every way by taking shares, and otherwise, by opening up their districts; and until this is done, there is no chance of railway accommodation being much further extended. I could well imagine, at the outset of the introduction of railways, that objections would be made to them, as I find that when Mr. Adams, as counsel for the Liverpool and Manchester bill before Parliament, endeavored to show that the newly proposed mode of conveyance would be "as cheap, as safe, and as certain as any other mode in all respects," it was strongly opposed by the canal companies, who brought forward witnesses to prove that a speed of eight or nine miles an hour was utterly impossible; and that the railway trains could only be worked by horses, and would be beaten easily by canal boats; and Mr. Harrison, one of the counsel for the opposition, said that "any gale of wind, which would affect the traffic on the Mersey, would render it impossible to set off a locomotive engine, either by poking of the fire or keeping up the pressure of the steam, till the boiler was ready to burst!" Since this time, and since the establishment of railways throughout the kingdom, whenever large importations of food came into Liverpool, it is with the greatest difficulty that railway companies can clear their stations. London is now become the great distributing centre of the traffic of England, and almost of the European world, and its inhabitants are almost dependent on railways for their daily trade and food. When it is known that in 1866 32,439,891 tons of merchandise were carried by railways in England, some idea may be formed of what can be done by that means of transit. In addition to this, 1,813,151 head of cattle were carried, 7,180,845 sheep, and 1,617,587 pigs; but in the United Kingdom there were, in that year: cattle, 2,706,362; sheep, 9,537,524; pigs, 2,837,936; and total general merchandise, 38,649,938 tons. Most of the food arrivals are in the night. The *Quarterly Review* says that "the most important are the two express meat trains from Scotland; trains which may be said to have revolutionized the cattle trade of the Highlands. The first arrival is the daily meat express from Inverness, Aberdeen, and all Scotland north of the Tay, consisting of 44 wagons filled entirely with fresh beef and mutton; it performs the journey in about thirty hours, and arrives punctually at 11:5 P. M. The second Scotch meat express consists of 55 wagons, usually drawn by two powerful engines as far south as Rugby. It is principally filled with fresh butchers' meat from the west of Scotland, and arrives at Camden at 2:40 A. M. These valuable freights are dispatched with all celerity to Newgate and Leadenhall, from thence they are distributed by noon all over London; so that the bullock that was grazing under the shadow of Ben Nevis may, within 48 hours, be figuring as the principal *piece de resistance* at a West End dinner." The Aylesbury meat, butter and milk train, of 20 wagons, arrives at 1:20 A. M., and is followed by various others up to 3:20 in the morning. I am speaking now only of the London and North-western line to Camden Town. Cattle dealers calculate that for every beast traveling he loses eight pound weight per day—whether by road or railway; it therefore behooves us to see that our animals are carefully and rapidly brought to their destination. I regret to say, however, that nothing can exceed the brutality with which cattle are treated oftentimes on lines of railway; surely some means could be found, at all events, of giving them water on their journey. The *Quarterly Review* again says that London alone received in 1867 172,000 beasts, 1,479,609 sheep, and besides these the dead meat brought by railway was equivalent to 112,000 more beasts and 1,[illegible]67,000 sheep, a legion of live stock, which, ranged in close columns of 12 deep, would extend from London to beyond Aberdeen. Of wheat 500,000 qrs., 1,250,000 sacks of flour, and 771,034 sacks of malt; (how much more if the odious malt tax were off!), of milk 6,309,000 gallons were delivered; potatoes, fruit and vegetables, more than 155,000 tons; of butter, from the farms of Normandy chiefly, the Brighton and South-western lines alone brought 14,819 tons, and these two companies brought 11,257 tons of French eggs, or more than 3,000,000 eggs a week all the year round. A great deal of this goes through London for distribution in other parts of the country. Manchester alone takes from ten to fifteen tons of water cresses daily; and 200 tons of new potatoes. Now all this enormous consumption of food, all, mind you, sprung somehow or other from the land, if not all from England, being rapidly carried from the place of production to the place of consumption, has enormously influenced agriculture. It will completely change the aspect and cultivation of the country in a few years, and arable farms contiguous to railway stations, within easy reach of the metropolis or the large towns of the north, I believe, will soon be laid down into permanent pasture where the soil is at all suitable, so as to produce those perishable commodities which must have rapid transit, and corn-growing must be followed further a-field. This is rather different, I think, to some opinions which had lately been broached at our meetings, as to plowing up grass lands. It is too deep a subject, and would be fearfully tiring to go into this branch of the matter.

ABSORPTION OF LAND BY RAILWAYS.

I shall, therefore, pass on to the *consumption*, or I may say, the *absorption* of land by railways. I find that up to the end of the year 1866, the last year that has been made up by the Board of Trade, that 9,701 miles of railway have been opened in England and Wales, and you may fairly take on an average that, including station accommodation, about ten acres of land are taken per mile; there will, therefore, have been 97,000 acres of land taken out of cultivation, or 560 farms of about 200 acres each. This is another of the influences of railways upon agriculture. It may be said: "But a great deal of this land was moor land, or commons, or tracts of useless land for agriculture." This is not so great as you may suppose. Our main lines mostly follow population, and population has generally settled itself down in early times in fertile places. Take all the ancient cities of this favored land, Salsbury, Canterbury, York, Wells, Exeter, Worcester, Carlisle, and most others; fertile districts brought population, and they in turn spread themselves over the land. In more modern times manufactures and mining wealth have exercised influence, and cultivation followed, so that there are not many barren tracts occupied by railways in England and Wales; but when I throw in Scotland and Ireland, it still further strengthens my argument. I find the former has 2,244 miles opened, and Ireland 1,909, or 4,153 more, which at ten acres per mile is equal, therefore, to 41,530 acres, or over 200 more farms at 200 acres each. Now, against that quantity of land which was taken from uncultivated districts, I will put all those lines made since 1866, and those in process of construction, and I think I may safely say that over 700 farms of 200 acres each are gone out of cultivation in Great Britain and Ireland in the past 35 years. You will see here how wonderfully railways have influenced agriculture, by absorbing so much of the cultivated land of this nation; but, on the other hand, by the facilities they offer for the carriage of coal and manures for the cultivation of the land and other purposes, and the delivery of the produce of the land, and rapidity of communication, they somewhat help to make up for this abstraction, if I may so call it, of the raw material of agriculture.

THE LABOR MARKET.

Again, the labor market is greatly influenced by railways. I find from a valuable little book written by Mr. Mills, called "The Railway Service," that from the last reliable source of information obtainable, there were in 1866—200,008 servants, such as ticket collectors, engine drivers, porters, guards, police, gate keepers, plate layers and laborers, the last two classes comprising more than half that number employed on railways. Now, Mr. Leonie Levi, in his remarks on the "Condition of the Working Classes," gives the following average as their earnings: Agricultural laborers, 13s. per week; railway servants, £1; railway artificers, £1, 10s. per week. I think these are fair calculations; and as most of those employed as servants and artificers—to say nothing of porters, etc.—are drawn from the strong, healthy agricultural population, there is a great influence at work to abstract them from agricultural pursuits. I must here also call your attention to this fact also, which strikes me forcibly, that this absorption is a great stimulus to education in rural districts, as "Hodge" finds his sons can't get a place on the railway unless they have had a reasonable education, at least as far as the three R's—"Reading, riting and rithmetic." I hope our national schoolmasters will look to this. I am confident this creates a great desire on the part of our rural poor in the neighborhood of railways for better education. You may see how this constant drain of young men will tend eventually to raise the price of agricultural labor throughout the country.

GENERAL RESULTS.

Now, as I have shown how largely railways influence agriculture in every department, I have not space, and I am sure you have not time, to go further into the matter to-night. That rents have been largely raised by railways passing through districts where communication with great towns was difficult, cannot be denied; but they have given an equivalent to the tenant, by giving him increased facilities for personal traveling, and for disposing of his produce. That labor has risen, and will rise higher, can not be denied; and I believe the increased facilities for the poor man's obtaining his daily wants will make a considerable addition also to his income, and he will therefore be bettered both ways; and the whole agricultural population must be largely benefited by railway progress. I find even costume has been influenced by railways; the long smock frock dangling about the heels of the laborer is rapidly going away to the short slop of the navy; and the top-boot, in which the farmer rode to market, has given way to the very uncomfortable trousers. Dialect has been influenced by railways; men travel now so constantly, that peculiarities of speech are in some degree disappearing, and the tendency is to a more general fusion of races, if I may so call them, throughout the kingdom. I have no doubt it would amply pay to make cheap lines through favorable districts as regards gradients, and I have no hesitation in saying the day is not far distant when tramways will be made from town to town, and thus increase facilities for communication.

DRAWBACKS AND ADVANTAGES.

But if railways do so largely influence agriculture advantageously, they have certain drawbacks, which they ought to be compelled to remedy. I have before alluded to the disgraceful way in which live stock is generally treated on transit, unless they are sent in horse boxes or by other very expensive means; and I must call attention to the manner in which their embankments and cuttings and waste lands are often left—noxious weeds of every description growing upon them, and their seeds wafted away for miles over the country; in many cases the fences in a wretched state, and the level crossings often insecure; the embankments stopping the drainage of whole districts, and the watercourses often badly attended to. On the other hand, they have been the means in many agricultural parishes of largely reducing the rates, in some instances to a fabulous extent, almost bearing themselves the whole ratal of the parish.

AGRICULTURAL MEETINGS.

Having, therefore, read so much on this subject, and finding my paper comprises such a vast area of discussion, I must bring my remarks to a close, as I am sure I have tried your patience, and I know I have tried my hand in writing; yet I cannot conclude without calling attention to one subject—that of the way in which agricultural meetings and exhibitions of stock and implements have been influenced by railways. From returns which I have obtained from two of the leading agricultural societies in England, I am enabled to give you the following wonderful results: Although a large number of visitors attended by other means than that of the railway, in 1864, at the Newcastle meeting of the Royal Agricultural Society of England, the number of visitors was 107,405; in 1865, at Plymouth, 88,036; in 1867, at Bury St. Edmund's, 61,837; in 1868, at Leicester, 97,138; and this does not include the members of the Society, of whom about 2,000 attend annually. The entries of live stock at Oxford, in 1839, were 350; in 1840, at Cambridge, 451; in 1847, at Northampton, 580; in 1854, at Lincoln, 950; in 1863, at Worcester, 1,217;

and in 1868, at Leicester, 994. The largest number was at Battersea, where 1,986 were entered. And in implements the results were even more marked. At Canterbury, in 1860, there were shown 3,944; at Leeds, in 1861, 5,488; at Battersea, in 1862, 5,064; at Worcester, in 1863, 5,839; at Newcastle, in 1864, 4,024; at Plymouth, in 1865, 4,023; in 1866 there was no show in consequence of the cattle plague; at Bury, in 1867, 4,804; and at Leicester, in 1868, 6,369. At the Manchester and Liverpool Society the numbers were: At Manchester, in 1848, 2,322; at St. Helen's, in 1855, 3,757; at Warrington, in 1862, 15,868; at Manchester, in 1867, 33,403; at Southport, this year, 24,242; and for stock and implements, in the same proportion. I think the following quotation from the *Quarterly Review* is as truthful as elegant: "To whatever branch of the subject we turn our attention, it is George Stephenson that fills the foreground of the picture. The monument of his greatness may be said to be everywhere. There is not a line or a locomotive which does not bear testimony to his genius, his sagacity and his perseverance; nor is there a traveler on a railway, who saves time, money, fatigue and anxiety, nor a consumer of the commodities which are conveyed so cheaply and so expeditiously by this new channel of communication, nor a single soul of the many thousands to whom the system directly or indirectly has given wealth, competence and employment, who has not reason to think of George Stephenson with gratitude for the benefits he has conferred, and with admiration for the intellectual triumphs he achieved." And I may, without fear, say that, had it not been for the steam horse and the iron road, I should not have seen so distinguished and enlightened a body of agriculturists here to-night, to be bored by my lengthy paper; but my apology must be the importance of my subject, and the confidence I have that those who hear me and those who read the paper will be fully convinced how greatly the whole kingdom has felt "the influence of railways on agriculture." I may therefore fitly close my paper by quoting the epitaph on Sir Christopher Wren, in St. Paul's, in relation to this great influence—"*Si monumentum quœris circumspice.*"—*Country Gentleman's Magazine.*

PRESERVING EGGS.

No egg is fresh that will shake; this is because it has lost some of its albumen. No egg has ever been preserved over a month that will not shake, except it be air-rooted, which is a term not generally understood, and is a new process. The egg has been coated with every conceivable composition, even in solid stone, and galvanized, yet the watery material escapes. The philosophy of this is, that there is air in the egg before it is treated, and this, uniting its oxygen and carbon, produces decomposition by carbonic acid gas, the yellow of the egg first breaking; then follows the destruction. Eggs are naturally designed to last as long as the hen requires to get her brood, and the life-germ can be preserved a few weeks—seven or eight—but no longer. The egg itself may be kept in a preserved state for two years, by greasing with butter, oil, or lard, but from the time it is thus put up, to the end of two years, it will daily lose its albumen by transpiration, and while its carbonic acid escapes to a certain extent, the egg-meat will be reduced two-thirds, and will shake. For culinary purposes they will do well. But we want a whole egg, not a half one, and we want them fresh. Butter, and lard, and suet have been used for half a century; still nothing has recommended itself over the liming system in a commercial point of view. The theory has always been and still is, that to keep an egg fresh the air must be excluded. It is the only philosophical treatment of it that can be made. Externally kept from the air, the latter is powerless to do harm, but the air inside no mortal can prevent, and that alone in time will decompose the egg.—*Country Gentleman's Magazine, London.*

THE CLOTHES-MOTH.

The following account of this well known plague of the careful housewife is condensed from an interesting article by Dr. Packard, in a recent number of the "American Naturalist," a periodical that we can most cordially recommend to our readers:

"For over a fortnight we once enjoyed the company of the caterpillar of a common clothes-moth. It is a little, pale, delicate worm, about the size of a darning needle, not half an inch long, with sixteen feet, the first six of them well developed, and constantly in use to draw the slender body in and out of its case. Its head is armed with a formidable pair of jaws, with which, like a scythe, it mows its way through thick and thin.

"But the case is the most remarkable feature in the history of this caterpillar. Hardly has the helpless, tiny worm broken the egg, previously laid in some old garment or fur, or wool, or perhaps in the hair-cloth of a sofa, when it proceeds to make a shelter by cutting the wooly fibres or soft hairs up into bits, which it places at each end in successive layers, and, joining them together by silken threads, constructs a cylindrical tube of thick, warm felt, lined within with the finest silk the tiny worm can spin. The case before us is of stone-grey color, with a black stripe along the middle, and with rings of the same color round each opening at the ends. Had the caterpillar fed on blue or yellow cloth, the case would, of course, have been of those colors.

"Days go by. A vigorous course of dieting on its feast of wool has given stature to our hero. His case has grown uncomfortably small. Shall he leave it and take another? No housewife is more prudent and saving. Out come those scissor-jaws, and lo! a fearful rent along each side of one end of the case. Two wedge-shaped patches mend the breach, caterpillar retires for a moment; reappears at the other end; scissors once more pulled out; two rents to be filled up by two more patches or gores, and our caterpillar once more breathes freer, laughs and grows fat upon horse hair and lamb's wool. In this way he enlarges his case till he stops growing.

"Our caterpillar seeming to be full grown, and hence out of employment, we cut the end of his case half off. Two or three days after, he had mended it from the inside, drawing the two edges together by silken threads, and though he had not touched the outside, yet so neatly were the two parts joined together that we had to search for some time with a lens to find the scar.

"To keep our friend busy during the cold, cheerless weather, for it was in mid-winter, we next cut a third of the case off entirely. Nothing daunted, the little fellow bustled about, drew in a mass of the woolly fibres, filling up the whole mouth of his den, and began to build on afresh, and from the inside, so that the new-made portion was smaller than the rest of the case. The creature worked very slowly, and the addition was left in a rough, unfinished state.

"We could easily spare these voracious little worms hairs enough to serve as food, and to afford material for the construction of their paltry cases; but that restless spirit that ever urges on all beings endowed with life and the power of motion, never forsakes the young clothes-moth for a moment. He will not be forced to drag his heavy case over rough hairs and fuzzy wool, hence he cuts his way through with those keen jaws; thus the more he travels the more mischief he does.

"After taking his fill of this sort of life he changes to a pupa, and soon appears as one of those delicate, tiny, but richly variegated moths that fly in such numbers from early spring until the fall. Very many do not recognize these moths in their perfect stage, small as they are, and vent their wrath on those great millers that fly around lamps in warm summer evenings. It need scarcely be said that these large millers are utterly guiltless of any attempts on our wardrobes; they expend their attacks in a more open form on our gardens and orchards. The clothes-moths begin to fly in May, and last all through the season, fluttering with a noiseless, stealthy flight in our apartments, and laying their eggs in our woollens."
—*Country Gentleman's Magazine, London.*

A HAMBURG PORK-CURING ESTABLISHMENT.

The well-known pork-curing establishment of the firm of J. D. Koopmann is situated in Kieler street, leading to St. Paul's, one of the suburbs of Hamburg. It has acquired a notoriety, as well for its extremely practical organization as for the immense quantity of pickled pork with which it supplies the market—a quantity representing the annual slaughter of about 80,000 head of swine. The greater part of this pork is dispatched to London in weekly shipments, the amount sent varying of course with the season of the year. During the hot summer months, when fresh meat will not keep so well, the consumption of salted pork increases, and Mr. Koopmann thus finds himself called upon to keep pace with an increased demand just at a time when the process of curing is attended with more than usual difficulties. A scrupulous regard to cleanliness and liberal use of ice become then more than ever two of the essentials to success. The pigs cured at this establishment, though bought from farmers in Mecklenburg and Shleswig Holstein, are all of English breed, and dairy refuse forms their staple food. The refuse produces, along with a fine, delicate, lean meat, rather a soft, flabby fat; and as roasting pork, not fat bacon, is the object in view, a certain amount of caution in feeding with it needs to be observed. In compliance with the demands of the London market, as a rule, only such animals are slaughtered as do not exceed 200 lb. live weight. It sometimes happens, however, that during winter an exceptionally fine pig is killed which would turn the scale at 280 lb. The swine purchased by the firm are all paid for at so much a pound dead weight, fat and lean together; and in order that no difficulty may be experienced at weighing time in distinguishing one man's pigs from another's, each carcass is branded with the initials of the owner. Immediately on entering Mr. Koopmann's slaughtering premises, which are large enough to hold 10,000 head of swine, one's attention is directed to a certain cold, gloomy-looking courtyard, where many hundred specimens of the porcine race are suspended from a beam in uniform rows. Glancing round in another direction, the eye is caught by a multitude of their live brethren being driven into a well-littered pen. Out of this one pig after another is seen to pass through a door into a small inclosure, where a single well-directed blow on the head puts an end to the animal's existence. A few minutes have barely elapsed before the carcass of the slaughtered animal is suspended by a short chain and hook to the iron beam, which runs from end to end of the building at an easy accessible height from the floor. The next operation consists in cutting through the jugular vein and arteries of the neck, and the blood thus liberated flows into a truck, and is carefully preserved for utilization as manure on Mr. Koopmann's estate. After being bled, the still warm body of the pig is pushed forward on the bar, unhooked from the chain, and removed by means of a crane to the singeing oven, where it remains for a few minutes exposed to a glowing white heat. The rough dirt and singed hair which still adhere to the carcass are scraped off by hand, and the pig then passes to a man whose duty consists in slitting open the belly, clearing out the entrails and detaching the caul. That accomplished, the breast, and, on removal of heart, lungs, &c., also the back-bone require to be sawed through from end to end, and the head is then severed from the trunk. In this branch of the establishment division of labor is carried so far that each man through whose hand the carcass passes is expected to confine himself to one single cut or stroke, and it may therefore be imagined with what dexterity and exactitude the different operations are performed. The two sides, into which the carcass has been reduced by sawing the back-bone down its center, are the only portions of the pig which enter the curing house. The head, when not disposed of to some restaurant keeper, finds its way, along with the trotters, to the glue manufacturer, and the intestines, belly, milt, lungs and heart meet with a ready sale as material for sausages. Every particle of fat adhering to the caul and intestines, and more especially that fine white portion which surrounds the kidneys, is carefully detached, and after being rendered down in boilers, is poured into huge casks and allowed to stand. To purify it still further, the melting down and settling processes require to be repeated several times, and the final product, collected in bladders, is sold as lard. When all the lard has been strained off, the coarser, less valuable fat, separated by pressure, is packed in casks, and what remains in the press in the form of cakes—so-called greaves—possesses a marketable value as pig food. The immense vault used as a curing house, to which the sides have been removed, is kept, by means of ice in an adjoining celler, at a constant temperature of 3 deg. Reumer (about 39 deg. Fahr.). After being dipped in a strong solution of pickle, the sides are placed on a block, and thoroughly rubbed with Luneburg salt. Covered each with a thick layer of this salt, they are then piled upon one another in huge heaps, and allowed to remain so until the salt has penetrated through the entire mass. On account, however, of the unequal distribution of fat and lean on the hams and belly, a complete uniform salting of the sides is rarely attainable. Two or three weeks, occasionally even a month, must elapse before they are in a state to be taken down from the pile, and, in the language of the workmen, "swept off"—*i. e.*, freed from all superfluous salt. The number of days required to convert the living animal into sides, and effect a perfect cure, varies, of course, with the season of the year. Whilst in winter a fortnight generally suffices, in summer, owing to the difficulty of maintaining a low temperature in the curing house, the transformation often can not be completed under three weeks. Although, however, the extensive business of the firm assumes in winter somewhat diminished proportions, it is never entirely suspended; and the fact that the number of pigs slaughtered at the Kieler street establishment at no time averages under ninety a day, bears testimony to the thriving state of the concern.—*Country-gentleman's Magazine.*

INFLUENZA IN HORSES.

During the last year influenza has been extensively prevalent throughout England, and in some parts not a little disastrous, and it is now spreading northward into Scotland, where for the past six weeks a large numbers of horses have been suffering from this complaint within a radius of five miles of Edinburgh. It is satisfactory to be able to state that the epizootic, so far as it has gone, has not assumed a fatal type; but, at the same time, it is proving a source of no small pecuniary loss to owners of horses, who, in several cases known to us, have had more than half their stud put *hors de combat* from this cause at the same time.

The febrile affection known as *influenza*, as met with in horses, takes on such altered forms, according as it occurs in different places and at different times, that a description of any one epizootic will often appear to apply in a very limited degree only to what is observed at another place and time. Thus, one variety, attended by copious nasal defluxion, has been called *catarrhal influenza;* another, more particularly implicating the lungs, is designated *typhoid-pneumonia*, *broncho-pneumonia*, or *pleuro-pneumonia;* a third form, associated with rheumatism—*rheumatic influenza;* another, involving the digestive organs, and in particular the liver—*bilious* or *mucous fever*. That maladies so varied should be included under the same name is somewhat anomalous; but a propriety is seen in the classification when we consider how the disease passes from one type to another, as it extends by degrees over the different parts of the same country, and also the variations observed according as it occurs in different situations, healthy or otherwise. They all agree, too, in one important feature, namely, the low character of the fever, which seems to be the essential part of the malady, and the extraordinary prostration and unfitness for exertion by which it is accompanied.

It is a disease that invariably assumes certain definite characters of a favorable or unfavorable kind, as it finds its subjects in good hygienic condition or otherwise. This is, perhaps, more the case with this affection than with any other with which we have to contend, and hence the grand necessity for a close attention to such conditions when this disease prevails. This will often make all the difference between a safe and speedy recovery and a fatal issue; and the owner will better consult his own interests by an early attention to this than by employing even the best professional skill after a dangerous attack has set in.

Any case that debilitates the system renders it a dangerous subject for influenza. From the great depression of the vital powers attendant on this disease, it is of primary importance that these be not too far reduced previously, otherwise the strength may be insufficient to throw it off. Spare diet and aliment of an unsuitable or unnutritive kind are frequent causes of untoward results among particular stocks. Another no less important item is immoderate work. The health, it is true, cannot be sustained at the proper standard without a sufficient amount of exercise to cause a healthy assimilation of nutritive materials from the blood, and a sufficient development of the various tissues; yet if the proper proportion is exceeded, the normal assimilation is no less surely arrested, and deterioration and waste of tissues necessarily ensue. No quality of food or increase in its quantity will compensate for undue destruction of tissue by overwork, for the very sufficient reason, that the system has been exhausted, and is rendered quite unequal to the task of healthy digestion or other normal process. Moderation and regularity in both feeding and work cannot be too strenuously insisted on. Insalubrious stables are similarly injurious. The situation may be low and damp, or exposed to north or east winds, in which cases much may be done by attention to the drainage and to the mode of ventilation, so as to avoid rushes of cold air while insuring a sufficient fresh supply. Cold draughts are more especially injurious where the seeds of the malady have been sown, and even the late east winds have been keenly enough felt from the unusual susceptibility to cold attendant on the disease. Impurities in the respired air might be much more guarded against than they generally are in agricultural stables. It is difficult to correct such a widely prevailing abuse, yet it ought to be strenuously faced, and rigid cleanliness as well as perfect ventilation insisted on. Horses can, no doubt, be in a great degree rendered insusceptible to this evil influence through their having been for a length of time habituated to it, and from the fact that it is only a limited portion of their time that is spent in the stable, yet they can never gain anything like immunity. An animal breathing with the activity of the horse, and having such an extensive surface of delicate mucous membrane exposed to contact with the air, cannot always with safety respire air that is already loaded with organic impurity. If injurious to the healthy animal, such air becomes doubly so to the horse in the incipient state of influenza, when the air cannot be too pure, nor the breathing too much disembarrassed.

Contagion and infection, too, should be guarded against, as many cases of the disease are undoubtedly due to these; though it is equally true that in a large proportion these do not appear to act, but the malady is directly dependent on the prevalent epizootic influence.

As seen in Edinburgh, the malady is ushered in by great dulness, prostration and disinclination for exertion. The patient is slightly feverish, loathes his food, and is noticed to shiver more or less intensely in different cases. The nose, the tips of the ears and the legs are unusually cold; water runs from the eyes, and the animal becomes more dull and lethargic, and often unsteady in his gait. Often within a few hours of the first notice of the illness the pulse is found to have increased in number to sixty-five or seventy per minute; it is easily compressed, and imparts to the finger a peculiar thrill or flutter, which is very characteristic. The heart is found to beat violently when the hand is applied to the chest behind the left elbow. At this stage the mouth is hot, there is great thirst, the loins are rigid and unyielding when pinched, the coat stares, shiverings are frequent, the head is low, and the eyes closed and suffused with tears. On examination the eyelids are usually found to be much swollen, and their internal or mucous membrane highly inflamed. The membrane covering the front of the eyeball is in a similar condition, so that a cloudiness over the transparent cornea arrests the rays of light, and prevents any examination of the interior of the eye. The membrane of the nose has at first a bright red glassy appearance, though at a later stage it often assumes a darker and more dusky hue. It is noticeable that both this membrane and that of the eyelids usually acquire a yellowish tinge, evidently due to a torpid and unhealthy condition of the liver. The breathing is increased, and in some cases there are distinct indications elicited by auscultation and otherwise of complications within the chest. Coughing is by no means a constant symptom, and is sometimes never heard. The bowels are a little costive at the outset, and there seems less tendency to diarrhea than is commonly the case in such epizootics.

It has not, as already remarked, proved a fatal visitation, except in cases treated on the now exploded and destructive system by purging and bleeding. A mild aloetic laxative at the outset has not only not unduly excited the bowels, but seems to have relieved the animal greatly, and hastened a favorable termination.

Small doses of neutral salts and stimulants, such as the spirit of nitrous ether, have sufficed for after-medicinal treatment. Much importance, however, attaches to the supply of a spacious, dry, well-littered box, abundant fresh air, avoidance of draughts, comfortable clothing of the body, and flannel-bandaging the legs, and to daily or more frequent wispings to promote cutaneous circulation. When such measures are wanting the malady extends over a longer period, and the patient suffers proportionally in condition and otherwise.

Since writing the above, we have noticed in the newspapers assertions that this affection among the horses is closely allied to the cattle plague, if indeed it is not the same complaint modified by virtue of the species of animal affected, and that both are alike due to the same or an analogous atmospheric influence. If so, where has the cattle plague slumbered for the last century, during which influenza has so often invaded our country, attacking men, horses and dogs? How does it happen that for a hundred years the constitution of British cattle has been insusceptible to this atmospheric influence which affected other animals, but has suddenly, in 1865, become so morbidly obnoxious to its attacks? How is it that when no longer ago than last year influenza was so extensively prevalent, and so fatal to horses in many parts of England, the cattle in those districts maintained an entire immunity?

All such speculations are the veriest trifling with a momentous subject. Influenza invades countries independently of importations, whereas the cattle plague even in England, can be cleary traced in connexion with the transit of animals to different parts of the country; the *first* attacks large numbers of animals at once, prostrating a whole stable almost at the same moment; while the *second*, though due to animals newly introduced to a byre, does not affect the herd simultaneously, but leaves an interval —the period of incubation—between the appearance of the first and second class of cases; the *former* spreads over the ocean without visible means of communication, falling at once on ships far from land, and islands having had no intercourse with the mainland; while the *latter* has only spread in the lines of commerce along with certain contaminated cattle, and though attacking both extremities of our country by virtue of immediate or mediate communication, it has carefully respected and avoided exclusively breeding districts, and such as have imported no cattle from infected localities.—*Countrygentleman's Magazine.*

THE DESTRUCTIVENESS OF INSECTS.

Let us keep in mind the four states of life through which insects pass, viz., the egg, the larva, the pupa, and the perfect state. The female of the perfect insect having deposited her eggs, they, when hatched, become larvæ, *i. e.*, grubs, caterpillars, or maggots; these feed voraciously and grow rapidly, at times casting their skins. When their period of feeding and growing is completed, they become what are called pupæ, which generally are in a mummy-like chrysalis state; after remaining some time in the pupa state, they lastly become the perfect insect, *i. e.*, beetles, butterflies, moths, flies, &c.

THE COCKCHAFER BEETLE.

The insects which feed on the grasses of our pasture and meadow are occasionally permitted to become very numerous and destructive. One of the worst of these is the grub of the common cockchafer beetle (*Melolontha vulgaris*). The female beetle deposits her eggs in the ground, and the grub remains in a larva state for three years, feeding on the roots of grass, and of corn, and of various vegetables; then emerging from the ground, the perfect beetles carry on the same destructive process on the leaves of trees. This grub is known as the white grub, and in some parts of Ireland as the Connaught grub; its color is greyish white, except the tail-end, which is blackish; it is generally distended to the utmost with food, and so fat, and the end of its body so curved, that it cannot well crawl, but rolls over on its side. These grubs sometimes destroy whole acres of grass, by undermining, shearing away the roots, and so loosening the turf that it will roll up, as if cut with a turfing spade. At one time they did so much injury to a poor farmer near Norwich, that the court of that city gave him £25! It was stated that he had gathered eighty bushels of the grub. In 1785 many provinces of France were so ravaged by them that a premium was offered by the government for the best mode of destroying them. Fortunately for us, these grubs are picked up and devoured by many creatures, such as rooks and other birds, which actively follow the plow. In one place where the rooks had been extirpated, the farmers were obliged to pay women to follow the plow and perform the labor which the slaughtered birds would have done free of cost. Pigs are fond of these grubs, and poultry thrive well on them, as also on the perfect beetles when they, at the end of spring, come out of their three years' entombment, and take to wing.

THE ANTLER MOTH.

The pasture plants are injured also by the caterpillars of several insects. The antler moth (*charœis*, or *noctua graminis*) is abundant in Ireland and Scotland, less numerous in England, but general in the mountainous parts of the continent; its larvæ devour the roots of grasses, and between 1740 and 1750 committed such ravages in parts of Sweden that the meadows were white and dry, as if a fire had passed over them. In 1853 the caterpillars of this moth so infested some districts in Bohemia, that 200 men in four days and a half collected 23 bushels, or 4,500,000 of them. In 1759 and 1802 the high sheep farms in Tweeddale were so infested by a caterpillar, that spots of a mile square were covered with them, and the grass devoured to the root. The long-legged gnat, the meadow crane fly (*tipula oleracea*), or Daddy Longlegs, while in a perfect state is harmless, but when in the larva state is nearly as destructive to the grasses as the cockchafer.

Kirby and Spence state: "In Holderness, in the spring of 1813, hundreds of acres of pastures were entirely destroyed by them, being rendered as brown as if they had suffered a three months' drought, and destitute of vegetation, except that of a few thistles. A square foot of the dead turf being dug up, 210 grubs were counted in it; and what furnishes a striking proof of the prolific power of these insects—the next year it was difficult to find a single one. In many parts of England, in Holderness particularly, it cuts off a large proportion of the wheat crop, especially if sown upon clover leas."

The larvæ, when full grown, are of a dull greyish color, and without feet, and are in the shape of an elongated cylinder; they devour the roots of grasses and different kinds of corn, especially oats; also the green crops and most garden plants. They are especially injurious in the first crop after the breaking up of the grass land, also after beans and clover. In some places this larva is known as "the grub," and the effects of their "grubbing" in the young oat crops are well known to every farmer. The young crop assumes an unhealthy hue. Stephens' "Book of the Farm" says: "This hue should not be mistaken for the yellowish tint exhibited by the plant when the support derived from the seed is exhausted, and before the rootlets have obtained sufficient hold of the ground to maintain the plant. The grub taint is of a bluish and reddish tint, and many of the plants evidently appear to be dying, and the consequence is that large spaces are left without a plant."

THE WIRE-WORM.

In the British Isles there are to be found no less than thirty-six different species of crane-fly, many of them resembling each other in habit and character. Were not their numbers greatly kept in check by the insectivorous birds, and by the parasitic insects, their injuries to the crops would be far greater than they are. In these islands there are upward of sixty different species of wire-worm; all of these are the larvæ of the elastic beetles, which are commonly known as spring beetles, snap or click beetles, skipjacks. These names are given them because of a peculiar faculty they possess, by which, when they tumble on their backs they can spring up and light on their feet; while in the act of springing, they make a peculiar noise like the click of a spring. These beetles are harmless in the perfect state; but in the larva state, in which they are said to remain five years, many of them are very destructive, infesting cornfields, pasture land, and root crops in field and garden. Their rapacity is well known, as also their omnivorous character; there is no vegetable in existence known to be free from their attacks. Wire-worms generally have a long, slender, nearly cylindrical body, covered with a tough crust or skin, and are composed of twelve segments fitting closely to each other, and have six feet in pairs on the three segments near the head. One of the most destructive is the larva of the *Cataphagus lineatus;* it is entirely of an ochre yellow color, except the front of the head, which is brown, but for some time after a change of skin it is white; beneath the tail-end segment there is a fleshy tubercle which acts as a seventh foot; the whole body is smooth, with a few scattered hairs; when full-grown it is about seven lines long and nearly a line in breadth; the pupa is nearly white, and about three lines in length. The perfect insect is of a brown color, thickly covered with short pubesence, and is usually found creeping among the herbage or lying at the sides of stones.

The female beetle deposits her eggs in the earth, and when hatched the wire-worms are so small as scarcely to be visible to the naked eye, but they at once commence their attacks on the crops—corn, grass, roots or anything in the shape of vegetable produce. Sometimes they ascend in the stem of the plant, eating the succulent part of it, or creeping up the outside and feed on the leaves at night, but they prefer keeping below the soil, and feeding on the roots of plants and the stems just below the surface; here it is that they do the most injury. Much may be done to check such injuries by hand-picking and by allowing the birds to follow their natural habits of insect hunting, whereby they provide food necessary for themselves and their young ones.

In 1838 Mr. G. Pearce, of Pennare Goran, having sown 1½ acre of turnips to replace wheat that had been destroyed by wire-worms, he set boys to collect the insects at the rate of 1½d. per 100. They collected 18,000. As many as 50 were taken from a single turnip. Thus, at an expense of only £1 2s. 6d. he saved 1½ acre of turnips, worth £5 or £7, or more; while, as the boys could each collect 600 per day, 30 days' employment was provided for them at 9d. per day, which they would not otherwise have had.

It is said that in the Norfolk marshes, where the lapwings congregated and bred, the wire-worm was formerly unknown, but that since the birds have been destroyed by the sportsmen and the hunters after their eggs, the wire-worm is rapidly increasing in numbers and destructiveness. Some of the preceding observations may help us to avoid a common mistake of calling by the name of wire-worm such creatures as the centipedes, which are very different from wire-worms, both by nature and habit. Centipedes and millipedes are animals which are not classified among the insect tribe. As their names indicate, they have very many feet—never less than twelve pairs. They feed partly on succulent roots, ripe fruit, and decaying vegetable matters. They may be found under decaying wood and under stones, whence they come out at night in search of food. One species, the electrical centipede, common in some localities, is remarkable for having the power of giving out a phosphorescent light as it moves along, which on a dark night is very conspicuous, and often causes the centipede to be mistaken for a glow-worm. This centipede sometimes makes its way into the peach, plum, apricot, and other stone fruit when very ripe, and lies coiled up in the little space between the stone and the fruit, much to the disgust of any one who unexpectedly finds such an animal in his mouth. It is from 2½ to 3 inches in length, not more than half to three-quarters of a line in breadth, of a yellow color, with a reddish-brown head, and has 51 to 53 pairs of short legs—a large number, we may think, for one little creature. Yet, it is far outnumbered by a centipede in the Philippine Islands, which has 322 legs.

THE CLOVER WEEVIL.

The clover crop, roots, foliage, flowers and seed suffer much from several insects. The purple clover weevil (*Alpion africans*) sometimes eats every leaf in its progress, leaving only the fibre. When the clover is in flower the female weevil deposits her eggs, and the little maggots feed on the seed. When patches of discolored or brownish heads appear in a clover field, it is a proof that the weevils are at work upon it. In 1800 one grower of clover seed estimated his loss by this insect at more than £5 an acre.

THE FLY OR APHIS.

Peas, beans and other legumes are subject to much injury from many insects. As they rise over ground whole rows are sometimes cut off without apparent cause. If approached, the weevils fall down, and remain inanimate, so that it is difficult to detect them at work; but look forward a step or two and see numbers of them eating voraciously. Three successive sowings have been taken off by them. Some years these destroyers abound; others they are not to be seen in great numbers. When the pea has reached a more advanced stage of growth, the larvæ of a fly feeds on the pulp of the leaf, causing on it brown spots. When the pulse are in pod other weevils deposit their eggs, one in each pea, etc., in which, being hatched, each maggot consumes, by degrees, all the inside, so that in spring the husk only remains. Within that little husk has existed the egg, larva, pupa, and perfect insect, and in its due time this last pierces through the husk, and comes forth a beetle, to prepare for the renewal of its species. The bean, pea, hop, honeysuckle, rose, and many other plants are great sufferers from a multitudinous tribe of little insects that are remarkable for many peculiarities; these are the aphides, or plant lice. Some are of a green color—thence the name green blight; others, as on the bean, are black, thence called the collie. They congregate and multiply in vast numbers on the tender shoots, the under side of leaves, and even on the roots of some plants. With their little beak they pierce the soft substance of the plant, and drain the juice, which ought to go to nourish the plant. The multiplication of these little creatures is almost incredible; but some species of them much more so than others. Reaumur has proved of one species, that in five generations one aphis may be the progenitor of 5,904,900,000 descendants, and it is supposed that in one year there may be twenty generations. One of the many curious circumstances connected with the aphides is, that although, like all insects, the sexes are distinct, it often happens that generation after generation will be produced all females, and without the other sex capable of reproducing offspring. At least nine generations of fertile females have been successively produced within three months. One colony of the aphis Dianthi continued to increase for four years, without a single male among their number. In the year 1810 the produce of the pea crop was not much more than the seed sown; many farmers turned their swine into the pea fields, not thinking them worth harvesting. This damage was caused solely by the aphis, and was universal throughout the kingdom; so that a sufficient supply for the navy could not be obtained. The hop crop depends every year on the presence or absence of aphides; they are the barometer that indicates the rise or fall of the hop-growers' wealth, as also a branch of the revenue; the difference in the amount of duty on hops being often as much as £200,000 per annum, more or less as the aphis prevails or the contrary. In many species there is a pair of tubercles towards the extremity of the insect, which exude a sweetish liquid, in a manner analogous to the frothing of the cuckoo-spit. The honey-like liquid falls on the leaves of trees, and is then known by the name of honey-dew. Bees and ants are very fond of honey-dew, and may be seen in thousands on the trees where it is abundant. The bees take it up from the leaves; but the ants go to the fountain head, and sip the sweet secretion as it flows from the tubercles.

THE CUCKOO-SPIT AND COTTON BLIGHT.

Another tribe of injurious insects allied to the aphides is the cuckoo-spit or frog-hopper. The larva fixes itself on various plants, sucks their juices through its beak, and then surrounds itself with a mass of froth, within which it passes through its larva and pupa states, and thence it emerges, able to fly, to walk, to leap with an agility which has earned for it the name of frog-hopper. The apple and the pear chermes (scylla), also the American apple blight (coccus), in their larva state, reside not in a mass of froth, but in a mass of cotton, which is composed of a vast number of delicate white filaments, that exude from the body, and assume various forms in different species. Of the so-called American blight, the apple blight, the letters of "Rusticus" say—"In very hot weather you may now and then see this blight on the wing; it has just the look of a bit of cotton, or a downy seed, floating in the air, and is driven by every breath of wind quite as readily. If you catch and examine it, you will find it to be just like the plant lice which infest your rose trees, etc., but it is muffled up with cotton wood. If driven by the wind against the branch of an apple tree, there it will stick and found a colony; the white cotton soon appears in large bunches; branch after branch becomes infected; the tree grows cankery, pines, and dies." To destroy this pest he paints over every patch of white on the apple tree with warm double size. The foliage of the hedges, and even of the lofty trees of the forest, the young shoots, the bark, and sap-wood, also the hard, full grown timber, are subject to many injuries from insects. Some years the leaves of the hawthorn, the oak., etc., are drawn together in nest-like bundles, and the branches are left almost bare of foliage in summer, till a second growth of leaves comes on; this is done by myriads of caterpillars, which, with their threads and webs, bind the leaves and feed on them, and may be seen also hanging by their mouths to their threads from their branches. Wood says—"The injury thus caused to the trees by insects is not confined to the mere loss of the leaves for one season; for it occasions them to draw upon the funds of another, by sending forth premature shoots and making germs unfold that in the ordinary course would not have put forth their foliage till the following year." "The threads with which spiders make their webs are in some respects similar to those which are produced by various caterpillars, and in other respects are exceedingly dissimilar. In both cases the threads are formed from a semi-liquid secretion, which is produced in the internal organs; is forced through minute apertures at the will of the animal, and hardens into a thread as soon as it comes in contact with the air; but while the threads of the caterpillar are double, or rather two times fused together throughout their entire length, and proceeding from a tube at the mouth of the caterpillar, the threads of the spider are much more complex, each being formed of a vast number of smaller lines, which are produced from an organ called the spinneret, which is placed at the extremity of the body, so the spider always hangs with its head downward while lowering itself by means of its line." Some insects are called leaf-rollers, some leaf-cutters, wood-borers, miners, subcutaneous, etc., from their various habits of working, as the leaf-rolling caterpillars, leaf-cutting bees, wood-boring beetles, etc., subcutaneous larvæ, the carpenter bee, the burying beetles, etc.; some drill holes in leaves, some cut pieces out of leaves, which they carry to form their cells. The saw flies, with their peculiar two-bladed saw, cut grooves in leaves, etc., and deposit their eggs in the grooves; some burrow or mine underground at the roots; some in the leaves, between the two sides of the leaf, in that small thin space, working and feeding on the pulp, as the larvæ of the turnip saw-fly, some bore into the growing timber trees, and there live for years; others bore in the timber employed in our houses, buildings, gates, fences, or made up into furniture; others under water, bore and destroy the timber used in the construction of our ships, dock-yards, jetties, piers, as the ship-worm.

THE STEM-BORER WEEVIL.

The stem-borer weevil (Rhynchites alliariæ) drills a hole in the young twigs, there deposits an egg, then cuts off the shoot and causes it to fall to the ground. This insect attacks almost every kind of fruit tree; the gardener's grafts are often injured by it. A little beetle (Scolytus destructor), hardly the sixth of an inch in length, has caused the death of hundreds of our finest elms and other trees. The female beetle nibbles a hole in the bark, then cuts a channel between the bark and the outer layer of wood, and along the channel deposits her eggs; when hatched, the larvæ, with wonderful instinct, all start nearly at right angles to the channel, and advance without interfering with each other, each little grub increasing the diameter of its channel in exact proportion to its own growth. In a similar manner the ash-borer (Hylessinus fraxini) is destructive to ash trees. Examples of this may be seen between the loose bark of the wood of pailings.

THE PINE BEETLE.

The great pine forests of Germany have had 1,500,000 pine trees killed in one year by a little beetle called the Typograther (Tomicus typographus); the Germans call it the Turk. The Scotch pine black beetle (Hylurgus piniperda) mostly leaves the trunk of the tree untouched, but destroys the young side branches by boring into them and living in the pith. Countless numbers of young shoots, three to twelve inches in length, may be seen on the ground after a stiff breeze in a year when these beetles have been numerous.

BARK-BORING BEETLES.

An insect called the Sirex bores a small hole in the wood of fir trees and lays an egg, from which comes a maggot that bores the tree in all directions. Sometimes logs of timber infested with this insect are sawed up and used in buildings without the discovery of the hidden insects; but in their due time the larvæ become the perfect insects, which make their way out of the wood, to the alarm of the inhabitants of the house. Wood says—"A lady complained to me lately that her kitchen was full of hornets; on investigation it was found that new skirting boards had been inserted, and that the creatures had issued from them, their holes being evidence." On the Continent many insects are more destructive than in our islands; as many as 80,000 bark-boring beetles have been found in a single tree. The bark-borer of the oak (Scolytus pygmæus) so abounded some years ago in the Bois de Vincennes, near Paris, that 40,000 trees were killed by it. When in small numbers the bark-borers may do no great injury; but when very numerous they, by interrupting the course of the sap, and admitting wet between the bark and the wood, promote the decay and death of the tree. The house-keeper knows that insects are injurious to woollen garments, blankets, etc., as also to valuable furs; also sugar and sweet juices are consumed by wasps; cheese by other insects; some feed on chocolate, on the spices, in vinegar and in wine, and on corks; the beetles that feed on corks sometimes doing such injury as to necessitate the re-corking of the bottles. Drugs and medicines are not safe; some insects feed on rhubarb, ginger, cayenne pepper, cochineal, or even on the blister-beetle. Ham, bacon, and dried meats have their peculiar insects, and fresh meat of all kinds, poultry, and fish must be guarded from the blow-fly and other insects; flour and meal, bread, cakes, etc., have their peculiar insects, one of which, the meal-worm, remains in its larvæ state two years; hides and skins have been so injured by some species of dermestes in the large skin ware-houses in London that the merchants offered £20,000 as a reward for an available remedy. In some countries the number of flies and other insects that enter the house in search of food, or allured by the light, is so great as to spoil the comfort of almost every meal. A great part of our comfort within doors depends upon our apartments being kept clean and neat; but spiders, with their webs, and flies, in various ways, interfere with this comfort, and add much to the business of our servants.

THE LOCUSTS.

The migratory locusts of the hot countries are celebrated in history as widely-dreaded insect destroyers. We remember the account of their devastation in the land of Egypt: "For they covered the face of the whole earth, so that the land was darkened, and they did eat every herb of the land, and all the fruit of the trees which the hail had left, and there remained not any green thing in the trees, or in the herbs of the field, throughout all the land of Egypt." That was about 1491 B. C. We are told that about two hundred years before the Christian era, Africa was infested with such myriads of locusts that, after devouring every green thing and flying off to the sea, they were drowned, and being cast on the shore, they emitted a stench greater than would have been produced by the carcasses of 100,000 men. St. Augustine mentions a plague in that country from the same cause, by which 800,000 persons perished in the kingdom of Massanissa alone. From Africa this plague was occasionally imported into Italy and Spain. In the Venetian territory, in 1478, more than 30,000 persons are said to have perished in a famine caused by these insects. In 1650 clouds of them entered Russia and passed on to Poland and Lithuania; the air was darkened by them, and they lay dead heaped up to the depth of four feet. In 1747 vast swarms did infinite damage in Wallachia, Moldevia, Hungary, Poland and in Transylvania. In August one of these swarms was seen several hundred fathoms in width; at Vienna the breadth of one of them was three miles, and extended to so great a length as to be four hours in passing over the Red Tower. It so darkened the air that when it flew low one person could not see another at the distance of twenty paces. Kirby and Spence also mentioned a large swarm of locusts in the Mahratta country, witnessed by a friend of theirs; it so hid the sun that no shadow was cast by any object, and some lofty tombs distant not more than two hundred yards were rendered invisible. In such vast numbers do the migratory locusts assemble that after a severe storm, which is always fatal to these insects, a continuous bank of dead locusts has been formed three or four feet in height, nearly fifty miles in length, and exhaling a most pestilential odor from their decomposing bodies. In Southern Africa the swarms of larval locusts are little less to be dreaded than their mature and winged hosts. The following is an extract from Wood's "Illustrated Natural History," which takes it from Cumming on "Southern Africa": "We were standing in the middle of a plain of unlimited length, and about five miles across, when I observed the locusts advancing. On they came, like a snow storm, flying slow and steady, about one hundred yards from the ground. I stood looking at them till the air was darkened with their masses, while the plain on which we stood became densely covered with them. Far as my eye could reach, east, west, north and south, they stretched in one unbroken cloud, and more than an hour had elapsed ere their devastating legions had swepted by." Happily for us, the migratory locusts and many other destructive insects of the hot countries do not thrive in the British Islands; but there are amongst us more than twenty species of locusts of smaller kinds, all of which go by the common name of grasshoppers. We do not suffer much from them, but in some parts of Europe and America they are very destructive; a price has been set on their eggs. The city of Marseilles alone in one year paid £48 for their destruction—the price being 5d. per kilogramme for the perfect insects, and 10d. per kilogramme (about 2 lbs. avordupois) for the eggs. In the *Illustrated London News* of the 19th of September is given, in the words of a settler, a description of devastation caused by grasshoppers during the present year in the Red River settlement, in British North America: "In June the grasshoppers came up in swarms of countless millions from the northwest. They would begin upon a field of wheat, barley, oats or potatoes, and leave it as though it were newly plowed and harrowed, scarcely a weed being left, or a particle of anything for the use of mankind." Such is the disaster, against the effects of which in the approaching winter, an appeal is made for assistance to preserve the inhabitants from perishing by famine.—*Country Gentleman's Magazine.*

AGRICULTURAL SURVEY OF ERIE COUNTY.

A PRIZE ESSAY.

BY D. C. RICHMOND.

The early history of Erie county, as now formed, is a part of the historic records of that portion of the State of Ohio known as the Fire Lands. A brief sketch of the origin of this title, and of the early settlement of these lands, may not be inappropriate here.

On the 25th day of April, A. D. 1797, a British force, numbering upwards of two thousand men, under command of General Tryon, landed on Cedar Point, in the western part of the town of Fairfield, on the coast of Connecticut, and marched the following day to the town of Danbury, burning the buildings in the town, and committing many atrocities on the unarmed inhabitants. Early in July, 1779, General Tryon again landed, with a force of 2,600 men, on the coast of Connecticut, plundering the town of New Haven, and reducing to ashes East Haven, Fairfield and Norwalk, and committing acts of wanton cruelty and barbarity on the defenceless inhabitants of those towns. Besides those named, the towns of New London, Ridgfield, Greenwich and Groton, in that State, suffered severely by fire during these and other invasions by the British forces.

In the year 1792, the State of Connecticut, in consideration of the losses to the inhabitants by these invasions, donated to the sufferers all that part of Ohio known as the Fire Lands; being a tract of territory containing about seven hundred and eighty-one square miles, or five hundred thousand acres, which territory was afterwards, from the above circumstances, called the *Fire Lands.*

These lands were the most westerly portion of what was then known as the Connecticut Western Reserve, and generally known in that State as New Connecticut. This Reserve was a strip of territory lying in the north-west quarter of what is now the State of Ohio, and extending 120 miles from east to west, and an average of 50 miles from north to south, embracing a tract of 3,660,921 acres of land.

This territory was granted to the State of Connecticut, in the year 1662, by King Charles the Second of England, following the example of other monarchs of Europe, in granting to their subjects distant and foreign regions.

After the war of the Revolution, disputes arose between several of the States as to their respective rights in this territory. These disputes were only allayed by the concession of the whole tract to the United States Government, the State of Virginia reserving 3,709,848 acres of land, near the Rapids of the Ohio river, a tract known as the Military Bounty Lands, for her State troops, and the State of Connecticut reserving 3,666,920 acres, on the southern shore of Lake Erie, a tract known as the Western Reserve.

In the year 1800, jurisdiction over these two tracts was relinquished to the Federal Government, the States retaining the rights of soil, and disposing of it in small lots to settlers.

The tract of territory embraced in the limits of the Fire Lands was surveyed into townships of about five miles square, and these townships subdivided into quarter sections, and these again subdivided by private surveys into lots varying from 50 to 500 acres, to suit individual purchasers.

The larger portion of this land was bought up by men of wealth in the State of Connecticut, at an average price of about one dollar per acre, including costs of survey, some of them purchasing in this way an entire township, and not many of the owners ever seeing the land, which was generally sold by agents to actual settlers, at from three to six dollars per acre; the settler receiving a contract drawn up in such a manner that if the purchaser, within the time specified, should pay or cause to be paid the sum specified in the contract, with interest, then the owner was bound to execute a warranty deed of the land to the settler. It was often the case that the settler could not meet his payments, and was compelled to sell or abandon his contract.

After the close of the last war with England, the lands in this part of the State of Ohio were rapidly taken up by settlers, and many public improvements had to be constructed, which made taxation a burden to the owners of these large tracts of land, and they became very anxious to sell their lands. A large part of these lands was sold to actual settlers between the years 1820 and 1835.

ERIE COUNTY.

Erie is an Indian name, signifying raccoon or cat. There was also a tribe of Indians known as Eries, who formerly occupied this territory. Erie county was formerly a portion of Huron county, and, in 1838, was set off from Huron and organized into a new county, under this name, the county seat being located at Sandusky City. It is quite difficult to ascertain who the first settlers of Erie county were. Prior to the organization of the State of Ohio, many persons had squatted upon the lands, at the mouth of the streams and along the shore of Lake Erie, engaged in traffic with the Indians, and leading a hunter's life.

But these people were a race of wanderers, and gradually disappeared before the advance of the permanent settlers. A band of devoted Moravian missionaries made a settlement as early as 1790, on the banks of the Huron river, about two miles north of the site of the present village of Milan.

Among the first prominent settlers in this county was Almon Ruggles, who located in what is now the township of Vermillion, in the spring of 1808. He had a contract to survey the lands embraced within the present limits of the county. During the same year Jabez Wright, who assisted him in the survey of these lands, settled on the lake shore, in what is now Huron township. Between the years 1811 and 1820, a large number of settlers, who had previously bargained for their lands, emigrated from Connecticut to this county and formed settlements, which are known to this day by the name of some of the principal settlers. These settlers from Connecticut and other New England States laid the foundation for the present system of schools and churches, from which we are deriving the benefits at the present day.

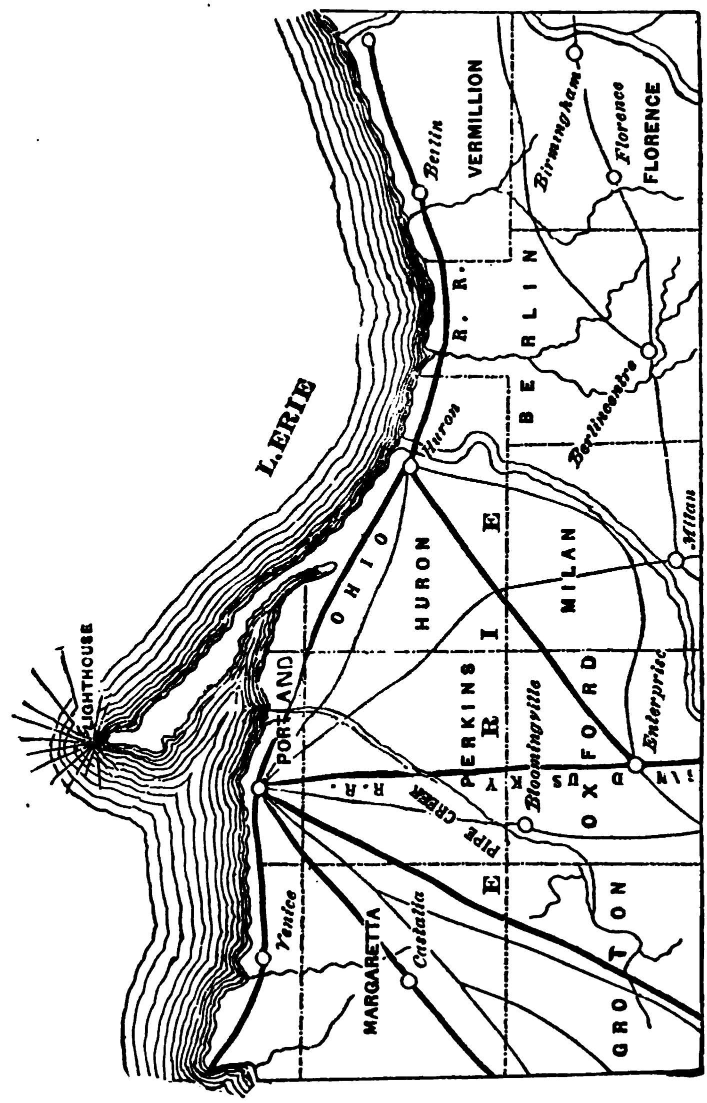
About the year 1840 some Pennsylvania Germans came in, who are proverbially good farmers, and were soon followed by a large German emigration from Western Prussia, in the Rhine District, and many from Baden and other small States of Germany, who have taken up the lands left by the first settlers, being the heavy timbered plat, rich lands, which were divided into small farms, and have been cleared and ditched, and now rank among the most productive and best cultivated lands in the county. These people have no drones in the hive.

We have some English farmers who located in different sections of the county, and who know the value of underdraining, and practice it successfully.

BOUNDARIES.

Erie county is in the form of a parallelogram, and composed of eleven townships, which were originally surveyed five miles square, except those which have the irregular shore of Lake Erie for their northern boundary. The townships are named Vermillion, Florence, Huron, Berlin, Milan, Oxford, Perkins, Portland, Groton, Margaretta and Kelley's Island. Two of the townships are very small: Portland was originally a part of Perkins, and Kelley's Island contains only 2800 acres of land.

This county is bounded on the north by Lake Erie; on the east by Lorain; on the south by Huron; on the west by Sandusky county and bay. It lies between 41 deg. 12 min. and 41 deg. 35 min. north latitude, and between 5 deg. 30 min. and 5 deg. 56 min. longitude west from Washington; or in naval terms, 82 deg. 32 min. 32 sec. longitude west from London, passing nearly through the center of the county. The height of Lake Erie above tide water is 557 feet; the height of land in the county above the lake ranging from 50 to 200 feet.



POPULATION.

The population of the county is 31,000. It contains an area of 157,297 acres of land, divided as follows:

Arable or plow land	80,794 acres.
Meadow or pasture land	43,335 acres.
Wood or uncultivated land	33,218 acres.

Making a little less than two-thirds of the land plow land, and leaving a trifle over one-third in wood and pasture. The average size of farms in the county is from 75 to 100 acres, and the price of farm lands ranges from $50 to $150 per acre, according to improvements and location. The price of choice grape lands ranges from $150 to $400 per acre.

CLIMATE.

The climate of Erie county differs in many respects from most other parts of the State. The average annual rain-fall for the last seven years has been 34 inches; the highest amount 93, and the lowest 25 inches. The greater part falls during the spring and early summer. The autumn months, for the latitude, are remarkably warm and pleasant. The greatest extremes of temperature are 96 deg. above and 12 deg. below zero. The average of extremes may be stated at 92 deg. above and 3 deg. below. The mean temperature for seven years is 49 deg. 9 min., or 50 deg. Fahrenheit. These figures are from the observations of Mr. Huntington, of Kelley's Island.

As illustrating the marked influence of the proximity of a large body of water upon the temperature of localities only a few miles apart, it may be stated that he found 94 deg. the highest reached the past summer, while I, three miles inland from Sandusky, found the mercury stand at 96 deg. three days in succession. Likewise, on the 2d of February he noted the mercury at 3 deg. below at 7 A. M., and with me at same hour and date the record was 7 deg. below. The difference in winter is attributable to the influence of the open lake eastward of the island. The ice in the bay and lake in our vicinity breaks up about the middle of March and drifts off. But the ice of the upper lakes passing by, keeps down the temperature of water and atmosphere, and causes cold spring months and strong cold winds. Hence vegetation is kept back and the fruit buds are retarded. The lake once cleared of ice, the water rapidly warms, and plant life awakens with safety, for the accumulated heat of the water prevents late frosts. So, too, the mass of waters heated by the summer's sun parts with its warmth slowly, shielding the shore some distance inward from early frosts. A severe frost on the main land is unusual before the middle of October, and on Kelley's Island before the 10th of November.

On the island, and main land bordering the water, there is a noticeable absence of those cool nights and heavy dews of the interior, so detrimental to grape culture. This is due to a light breeze inland from the lake during the night, which keeps the temperature above the dew point.

Table showing the temperature, rain, cloudiness, force of wind, &c., at Kelley's Island, O., (latitude 41 *deg.* 35 *min.* 44 *sec. north; longitude* 82 *deg.* 32 *min.* 32 *sec. west; height above tide water,* 587 *feet), for the month of October, for the last ten years:*

October—Years.	Mean temperature.	Highest degree.	Lowest degree.	Warmest day.	Mean temperature, warmest day.	Coldest day.	Mean temperature, coldest day.	Number of days on which rain fell.	Am't of rain in inches and hundredths.	Mean cloudiness, in tenths.	Mean force for wind.	Humidity, per ct., 100 being saturation.	Temperature of lake last day of months.
	Deg.				Deg.		Deg						
1859	49.67	71	32	4th	65.33	27th	36.67	8	1.33	5.00	3.13	.....	47
1860	53 40	68	42	4th	63.33	13th	44.33	8	2.93	5.71	2.50	.....	54
1861	55.42	76	39	4&5th	69 33	24th	44 00	10	2.09	4.81	2.39	.....	50
1862	54.37	79	34	8th	73.33	25th	35.00	9	2.50	5.49	3 21	.....	51
1863	50 14	70	39	17th	62.33	23d	41.67	10	2.84	5.99	2.87	.....	49
1864	51.23	70	35	5th	65.00	8th	40.00	10	3.20	6 66	2.65	.....	47
1865	53.50	74	38	7th	66 67	28th	41.00	7	3.11	5.38	3 52	.....	50
1866	56.18	75	38	21st	68.00	31st	40.00	8	1.84	5 85	2.96	.....	50
1867	56.65	78	38	18th	69.00	23d	44 33	9	1.68	4.91	2.90	82.2	56
1868	50.83	73	32	7th	62 67	17th	36.00	4	0.78	5.61	2.85	83.77	48
Mean of 10 yrs...	53.16	73.40	36.70	......	66.50	.....	40.30	....	2.23	5.54	2.90	.....	50.02

GEOLOGY.

There is a great variety in the geological formation in this county. In the eastern portion Waverly sandstone prevails, overlaid with black bituminous shale, and in the western part the formation is of limestone rock. The Waverly sandstone is very valuable for building and flagging material.

In the township of Vermillion, in the eastern part of the county, there is a large bed of bog ore, from which, in former years, large quantities of iron was smelted; but the furnace is now out of blast, owing to the scarcity of fuel in that section.

The Huron river is the western boundary of the sandstone. The shale crops out in a few places west of the river. Near the central part of the county, in the township of Perkins, is the most western point and the commencement of the limestone formation, which extends westward, cropping out in many places at the surface, and sometimes found at a depth of ten to twenty feet. A large amount of the best quality of white lime is burned from this in this section of the county. In Portland township and on Kelley's Island are seen glacier strata, with grooves cut by icebergs, which attract much attention from geologists. This stone makes very durable building material, but does not work as easy as the sandstone.

There are also, near Sandusky, in this county, inexhaustible quarries of a fine blue limestone, nearly as hard as granite, in layers of eight to ten inches thick, and generally used for building purposes, besides a large amount being shipped to other lake ports.

In the vincinity of Sandusky the land is underlaid at a great depth by a thick bed of plaster or gypsum, which crops out on the peninsula in Ottawa county. A large amount of this plaster is ground in Sandusky, being of a fine quality and used for a variety of purposes, but most extensively on the lands in some portions of the county, producing wonderful results.

On Kelley's Island the Gray Cliff limestone is only found. This is a good building stone, and from the quarries on the island large quantities are shipped to all the lake ports east and west, and to Canada.

In Margaretta township are many valuable quarries of Magnesian Cliff limestone, a stone formation very white, soft and easily worked, which hardens by exposure, and is quarried at a small expense, being valuable for building stone, and from which the best white lime is produced.

The only primitive rocks found in this county are in the form of boulders, which are distributed profusely in some places, generally on the high lands, many of them of large size.

Petroleum is found in small quantities in both the black shale and the limestone formations, and is seen on the surface of the water of springs that issue from the rock in different sections of the county. In the limestone region are found many sulphur springs issuing from the rocks.

SOIL.

The soil in the county is variable in its character, but susceptible of the highest state of cultivation. There is a high ridge running through the center of the county from east to west, parallel with and from one hundred to one hundred and fifty feet above the lake. The soil of this ridge is composed principally of shale, gravel and sand, while across the prairies in the western part, the soil is of a different character and the cultivation not so great.

The eastern part of the county is mostly composed of a clay loam drift, interspersed with gravelly, shaley, and sandy ridges, with some sandstone on the surface.

This land is of excellent quality, producing fine crops of grass, grain and fruit. In the middle section of the county is the commencement of the great prairie region of the west. There are some fine ridges in this section, but the most of it is a vast rich soil, and if underdrained is first quality land for most crops. Corn is the principal crop now raised. Oats and barley are grown to a considerable extent, and succeed well in dry seasons.

There is a great difference in prairie land here, some of it being a deep, black, mucky soil, from two to three feet deep. In other places in this section, the soil is but a few inches deep, underlaid with a very heavy clay, which is very tenacious, holding water like a basin.

The lake and bay shores are mostly composed of clay drift and in some places covered with a black, mucky soil. Most of the land along the lake and bay shores is suitable for vineyards, and largely devoted to that purpose.

The western portion of the county is composed mostly of a rich, sandy, alluvial soil, with oak openings, prairie and heavy timber land, interspersed with high, sandy ridges, generally productive of grain, grass and fruit.

In Margaretta township there is a section of calcareous soil, which produces large crops of the first quality of wheat, being the principal grain raised.

There is some rich bottom land lying along the Huron river, and some very fine land on our creek bottoms, very productive, and especially adapted to grass.

LANDS.

There were formerly some swamp lands in the eastern portion of the county, but they have been mostly drained or in process of draining. There are nearly 4,000 acres of marsh land in the county; over one thousand acres of this land lies in Margaretta township on the bay shore, about two thousand acres east of Sandusky Bay in Portland and Huron townships, and the balance of these lands on the Huron river and the small creeks that flow into the Lake. These lands afford considerable pasture at certain seasons of the year, especially during the fall and spring months, when the Lake is low.

During the months of June and July, when the water in the Lake is the highest, most of the land is under water from one to three feet. These lands are, undoubtedly, the richest in the county. The soil being brought down by the rivers and small streams, and deposited here, will some day be used to great advantage to enrich the adjoining lands. A large amount of wild rice is grown on these marshes, and they are a favorite resort for wild geese, ducks, etc., which are shot in great numbers by sportsmen who come from afar for this purpose.

On the northern and western border of this county is Sandusky Bay. The name is of Indian origin, and the bay is one of the largest on Lake Erie—being over thirty miles long and from two to five miles wide, and has an average depth of from ten to twelve feet, making a fine harbor for all lake crafts at Sandusky.

RIVERS.

The Huron river, running nearly through the centre of the county, is navigable for some distance, and drains completely that portion of the county through which it passes. It has two flouring mills on its banks in this county, and at its mouth gives to the town of Huron one of the best harbors on the Lake. In many places this river has high bluff banks, presenting fine romantic scenery.

Vermillion river is a fine stream, with high black shaly banks, flowing from Lorain county, and only running a short distance in Erie, entering the Lake at the village of Vermillion; also affording a good harbor for lake vessels of all sizes. There are quite a number of small creeks entering the Lake; these of considerable size entering Sandusky Bay, which are sources of drainage to this part of the county.

Cold Creek.—There are two remarkable springs at the village of Castalia, in Margaretta township, issuing from some lowlands below the limestone ridge, which are sixty feet deep, discharging from 4,000 to 6,000 cubic feet of water per minute, affording one of the best mill privileges in the State. There is one first class paper mill and two large flouring mills on its banks, which have a supply of water to run their machinery the entire year. The water of these springs have the singular properties of petrifying into stone vegetables, weeds, etc., put into it, in the course of a few months.

RAILROADS.

The commercial resources of this county are second to none in the State—Sandusky being the terminus of three railroads: the Cincinnati, Sandusky and Cleveland Railroad; Sandusky, Mansfield and Newark Railroad; and Cleveland and Toledo (Northern Division) Railroad. These railroads intersect the county from all points, affording abundant facilities for transportation to distant markets, and reached from eight different stations—Sandusky, Venice, Castalia, Prouts, Huron, Berlin and Vermillion; and in addition to these, there are in the county four fine lake ports—Sandusky, Huron, Vermillion and Kelly's Island—giving us direct communication with all the ports of the Lake and sea board.

FERTILIZERS.

Most of the lands of this county were, when new, very rich. During the first thirty or forty years of its first settlement, the making or saving of manure was seldom, if ever thought of. Instances are known of the early settlers often times moving their barns as the easiest way of getting rid of the accumulated manure. But not so, of late years. Our farmers have *awakened* to the *necessity* of putting to use everything that will tend to enrich the soil. How to make the most manure is getting to be the great question. (All now see the "almighty dollar" in it.) Many have tried, and I recommend, *composting* as one of the best ways of making it. It can be done at any time, but best in warm weather. The most common ingredients are, say one-fifth part barn-yard manure, one-fifth rich earth; balance, weeds, turf, muck, etc. The composting of fish offal, (which, during the fishing season, is obtained free in any quantity,) is, at present, attracting especial attention. It makes a powerful fertilizer, rich in nitrogen and of the same nature as guano. It may not be out of place here to give a part of my experience in the use of it. During the fall of 1867, I made a compost heap, using, to one wagon load of fish offal, one load of sandy soil and two loads of very poor manure from my hot-beds, made mostly of leaves. In the spring I used of this "heap" about as follows: To a hill of melons or squashes, two shovels full; in a hill of sweet or common potatoes, one shovel full—using on twelve acres of light sandy land about fifteen tons, producing over 10,000 melons, 700 bushels of sweet potatoes, 2,000 Hubbard squashes, a large amount of common potatoes, sweet corn and other garden vegetables, all, in quality, at least twenty per cent. better than the average, *full product* over *fifteen tons*—two-thirds of which I credit to the compost.

In making this compost for general use I take one-sixth part fish offal, two-sixths manure, balance rich soil, adding a liberal sprinkling of plaster.

Some have spread the offal broadcast on their lands; when plowed under, great benefit is derived therefrom. In all this, no doubt, there is still room for improvement, as well as in the making and care of it.

There are twelve hundred tons of fish offal (refuse of dressed and poor fish,) produced annually. It has scarcely been used on the land where so rich a fertilizer could have been obtained for the mere taking away; the fish-houses were anxious to have it removed. During the past two years considerable quantities have been put on the land and with great advantage. We shall soon be glad to obtain it by paying for it.

During this year an oil factory has been successfully working it up for oil. But all the fish scrap is sent east, where there is a great demand for it to grind up and make fancy manures.

Fish Guano.—Last year a factory commenced working up the fish offal, extracting the oil and making fish guano of the residue, which is dried and packed in barrels ready for shipment. All that is made in a season, consisting of several thousand barrels, is shipped to Hamburg, Germany, for manure. The price at the factory is $35.00 per ton, which appears to be a high price,—has not been sufficiently tried as yet. I am giving it a trial this season; have no doubts of good results.

A large amount of *barn-yard* manure is annually wasted, by leaving it in the yard exposed to the heavy rains. The most economical way is to spread and plow it under in the spring. In this way it matters not how coarse the manure may be, the land gets the full benefit; but if left in the yard it should be thrown into heaps, and, if possible, so covered as to throw off the excess of heavy rains.

PLASTER.

This valuable material is made at Sandusky, by Messrs. Marsh & Co., in large quantities, by grinding the stones from the quarry, and which sold the past year at $9.00 per ton in bulk, or $11.00 in barrels. It is becoming to be very generally appreciated. On the majority of our lands it can be used to great profit; should be used on wheat in the month of May, and on other crops in May or June; the amount used, per acre, should be from fifty to one hundred pounds; sown broad-cast.

UNDERDRAINING.

Among the great improvements in farming, none are superior to underdraining; the effect is so astonishing, when thoroughly done, as scarcely to be believed.

I consider this fact of great importance. It has been demonstrated to a certainty, that by underdraining the land, good wheat can be grown on our flat wet lands in this county, which has a heavy clay subsoil and which holds water like a basin.

I commenced underdraing eighteen years ago. This was, I believe, the first underdraining done in this county. I have done more or less every year since, when I could work to advantage. This work is done late in the fall, winter and early spring, preferring a wet time; work done mostly by my farm hands, who are hired by the year.

I have over six miles of underdrains, discharging surplus water in a wet time night and day; nearly all are constructed of broken stone. Some of my main drains have a passage through them eight inches high and six inches wide, sides built up with stone, then covered with flat stone and filled with broken stone to within fifteen inches of the top, then covered with straw and clay in the usual manner. This kind of a drain is first class in every respect. It should be four or four and a half feet deep, costing $1.50 to $2.00 per rod, but is entirely too expensive except in certain cases.

I have tried what is called the French drains, by setting up flat stone edgeways; have tried several different methods of setting up the flat stones for a passage for the water. These have succeeded well with me for deep drains, but not so well for shallow drains. The dirt will get in, although I never had one fill up ,On all this class of drains always put on a heavy coat of broken stone.

I much prefer to put in more drains at less expense than those above described. After watching the effects of several methods of constructing stone drains, for many years, have adopted the plan of digging my drains from two and a half to four feet deep; although in some cases have had to dig them six feet deep to get fall enough to drain some particular piece of land. Dig them with the common shovel and spade—the two last spits the width of the spade. The stone is sometimes hauled out in the winter and put where wanted, broken up, and thrown into the ditch. After they are brought in a wagon, one man breaks them up with a stone hammer, two men shovel them into the ditch, filling them to within twelve or eighteen inches of the top of the ditch; one hand hammers them down close, keeping them level at the same time. Then I throw on a good coat of straw, hoe on a few inches of clay, cover with the plow, with clay which is just close to the ditch for that purpose. I am aware that there are objections to stone underdrains, but believe them to be best as a general rule; have no faith in cobble stone, never having used them except in a few instances putting them at the bottom of deep drains, always covering them at least two foot with well broken limestone, and which have always proved good drains.

What is remarkable, I have never had one of these stone drains obstructed yet. I believe my success is owing to the good quality of the stone for that purpose. I use a thin, hard limestone, averaging from one to two inches thick, easily broken, and, what is of more importance, plenty of them, for when I do any kind of work, believe in doing it well. A large part of the stone are picked up off a limestone ridge, which always produces a crop of stone when plowed. Formerly this lot of 15 acres could scarcely be plowed. By taking off the stone it can now be well plowed, and is a valuable lot for wheat.

We have thousands of acres of this limestone land in Erie county, but their value could be doubled by taking off the stone; also some sandstone ridges. By using these stones for underdraining the low, wet lands which generally are adjoining them, this kind of land would be more than doubled in value. This fact is worth examination. I can state, with 18 years' experience, that no other material need be looked after when we have plenty of this limestone near by. It is best to use plenty of them, to make underdraining successful.

In regard to the cost of stone or tile drains, there is not, in fact, much difference, as applied to my farm, when all things are reckoned close. The stone saves paying out the money. I am decidedly of the opinion that stone can be used only under the most favorable circumstances. I have, in former years, used some tile when they were cheaper, and I still use a few every year. They have always done well. I put a small slip of brown paper over the joints of the tile as I lay them, which is an advantage.

There are three tile manufactories in this county, which I know make a first class article of pipe tile; and in eight farms out of ten in this county no other material should be used. They are the cheapest and best.

My first lesson in underdraining was in the garden 18 years ago, which has paid expenses every year since. I underdrain all my land for horticultural productions, the first crop often paying expenses, especially strawberries. I find that my upland black sandy ridges pay well for underdraining, which are not called wet.

I will give some of my experience in field crops. In the fall, winter and spring of 1862–63, I underdrained a ten acre lot and partially underdrained another ten acre lot, of burr oak, shale and prairie land, with from 8 to 18 inches black soil; in places very wet. This was *crawfish land*, and no mistake; for they had holes all over it. In dry seasons, would raise a fair crop of corn; in wet seasons the crop would not pay expenses. The underdraining cost $300; over 400 rods constructed; two main drains costing $1.25 per rod, the balance 50 cts.; done when labor was cheap, with stone hauled one-fourth of a mile; main drains 4 feet deep, the others 2½ to 3½ feet deep. The lot partially drained was put in barley, and produced 33 bushels per acre. The wettest portion of the lot underdrained produced 40 bushels per acre. The extra crop of barley more than paid the expense of $100 for draining the first year. Since then it has been mowed, producing a crop of first quality of hay each year.

The other lot the same year, 1863, produced nearly 100 bushels ears of corn per acre; in 1864 over 100 bushels ears of corn per acre. In 1865 the lot was planted in barley, producing 30 bushels per acre; bad season —grain lodged and wasted. The extra amount of grain in these three years more than paid the expense of $200 for draining. In 1866 plowed deep, once; drilled in wheat first day of September, only expecting to get some straw and seed. No one expected this lot would grow wheat. The wheat was mostly winter-killed in this section. This lot produced 240 bushels of good wheat; part of it sold for $2.40 per bushel. The crop was worth $560, which was all clear gain; for if the land had not been underdrained, it would have produced no wheat at all. I have since cut two crops of hay and one of good clover seed on this lot, and, without manuring, has paid the cost of underdraining. The market value of the land has doubled in value since I commenced underdraining. This has been accomplished by the extra amount of crops harvested in six years, simply by underdraining.

Another lot close by has this year produced 25 bushels of wheat per acre, bad as this season was. A clay ridge in this lot, which I at first supposed did not want underdraining—reasoning by comparison—I have since drained with the most satisfactory results.

Last year I underdrained a very wet, level five-acre lot, prairie land. The drains were from 50 to 60 feet apart, 3 feet deep at lower end, and 2½ feet at upper end; stone was put in 2 feet deep at lower end, and 1 foot deep at upper end. The cost of digging was 25 cts.; stone, 12½ cts.; putting in stone, 12½ cts.; filling ditch, 5 cts.; total cost, 55 cts. per rod. Did not charge for team; they had nothing else to do this time of year—winter. I put in some small cross drains in the wet spots. This lot has proven to be well drained. Cost per acre about $25, at 44 rods per acre.

The effect of underdraining this kind of land is like making new land of it. The land seems enriched by the ammonia and other gases retained in the soil, and not washed off by the heavy rains. The water from the drains is always clear, not washing away the finest portions of the soil. The last can be plowed any time, after sowing a crop; by putting it in season, the land can be plowed deep—the roots can go deeper in search of food. The nature of the land seems entirely changed; never bakes, but is loose and friable. Nor does it suffer from drouth, the capilliary attraction keeping the land moist and in fine order. The grass on pasture and meadow is much better. It will prevent wheat from winter-killing, by carrying off the surplus water quickly. Much wheat is killed in the winter by sudden freezing of the water on the surface during intense cold weather. Underdraining will remedy this completely.

I also deem it of great importance to know that good wheat can be grown on our level, flat lands of northern Ohio, if well underdrained. I don't care what material is used for underdrains, if the work only is well done. The grain crop on a large portion of the land of northern Ohio could be doubled by underdraining, besides doubling the value of the land and benefiting the whole country, especially the health of a neighborhood, where surface water is thus quickly removed. Many farmers are at work underdraining in this section. They all say that it pays, but there is not enough of it done. The value of it is universally admitted by those that have constructed underdrains.

A large amount of underdraining has been done in the vineyards, with the most satisfactory results. In fact, nearly all land suitable for grapes requires underdraining, and our grape men know better than to undertake putting out a vineyard on undrained land. Thirty feet apart is the proper distance, and three feet deep. Good pipe tile is the best material, and wet weather the best time to dig drains in the hard clay of the vineyards. Outlets for these drains are made by plowing and scraping out open ditches wide and deep enough for the purpose.

DRAINING TILE.

Three yards in this county are making tile: two in Perkins township and one in the town of Milan. The price at the yard is:

2 inch, per thousand	$14 00
2½ " "	15 00
3 " "	18 00
4 " "	30 00
5 " "	40 00
6 " "	50 00

This price is too high for tile to be used extensively, but the tile-makers say that they cannot be afforded less at the present rates of wages, &c. There is a heavy expense attending the tile business. In the first place, an expensive kiln of stone or brick must be constructed, in which to burn them, and a long shed with a wooden railroad, and small cars to run from the machine, to keep them dry, which must be open at the sides, besides other expensive machinery. The two tile yards have been in operation for the last seven or eight years in Perkins, and the first tile they made was a very poor article; but of late years they are making a first-rate article of pipe tile; rather rough, it is true, but heavy and strong, and no doubt very durable.

Our tile manufacturers do not work the clay enough, and dry the tile too fast, so that they will crack before burning, whilst others are not burned enough. Poorly burned tile should never be put into the ground; they will slack, break down, and result in great injury to the underdrains.

PLOWING.

The Michigan double plow has not been much used in this county. **James Truesdale**, of Four Corners, Huron county, exhibited at our county fair, last fall, a steel double plow, which is said to do good work with a single span of horses.

On our prairie and sandy soil, steel plows are generally used, and are especially constructed by plow-makers residing in this section, who have learned by experience what kind of plows are best adapted to our soil. Some plows turn a flat, wide, shallow furrow, which suit some people, but are a great mistake. Narrow furrows pulverize the soil much the best, but may require more time to plow a lot of land. It is cheaper in the end to take double time than have poor plowing done for nothing. Our most successful farmers plow 8 or 10 inches deep; this kind of plowing is well adapted to the deep, rich soils of our county. I have never heard of any lands being injured by deep plowing in this section.

In the eastern, western and Lake shore portions of the county, where they have a strong or clay loam soil, the cast iron mould-board and iron beam plow is the strongest, best plow, works well, and is in general use. The subsoil plow has been used to some extent, but is now seldom seen in our fields. The universal practice of preparing the land for vineyards is double plowing, which is done by two teams, one following the other in the same furrow; the last should be a deep tiller plow, throwing out as much of the soil as possible, to the depth of 12 or 14 inches.

This plan is practiced in preparing our lands for strawberries, raspberries, blackberries, &c.; it is also the best plan for preparing the land, when in greensward, for vegetables, melons, potatoes, &c. The first plow should cut 5 inches deep and the second 5 inches, making 10 inches deep. The teams must go fast enough to throw out the soil and cover up the sod, making a fine seed-bed. Few weeds will grow.

Plowing should be done early, to have the benefit of the frost to pulverize the soil, but probably will not do so well for clay lands.

ROTATION OF CROPS.

This is a grain-growing county, and a proper rotation of crops does much towards keeping up the fertility of the soil. The best rotation of crops which is practiced here, is, plow deep a meadow or pasture, or what is better, to double plow, but which is not generally done; still it has been practiced to a considerable extent.

Plant with corn; cultivate well, not allowing any weeds or grass to grow.

The second year, haul out long, unfermented manure; put on a heavy coat; plow deep; plant corn, cultivate well, not allowing a bit of grass nor a weed to go to seed. The crop of corn should be, in both years, over one hundred bushels of ears per acre, on the average, and in favorable seasons much larger, if the land is underdrained.

The third year put the land in barley; if the season is good, the crop should not be less than 40 bushels per acre. After the barley crop is off, pasture close with sheep, not letting them on in wet weather. Plow fine, good and deep once in August; drill in wheat about the first of September. If the season is favorable, a large crop of wheat may certainly be expected; if the land is well underdrained, seed down the last of March with 5 quarts of clover and 3 of timothy. As soon as the wheat is taken off, put on sheep and keep down the weeds for a short time; when there is no danger from weeds, take off the sheep, let no stock on, but let the grass grow up to cover the ground in winter.

I know that this rotation will kill weeds, grow large crops, and keep the land in good order. There is no necessity of summer fallowing land if this course is pursued, for the land will be clean and in good condition. Some of our farmers on the prairie, by keeping their lands almost constantly in corn year after year, are making a great mistake. A rotation of crops would be much better.

MEADOW, ETC.

For the past ten years the average acreage of meadow lands in this county has been about 3,000 acres; average yield 1¼ tons per acre, mostly comprised of timothy slightly mixed with clover. By some, clear timothy is grown; it brings the best price in our markets; while many permit all kinds of grass to grow on the same land, and get a very salable hay if they "make it while the sun shines" (and in these days of barometers none need be made at any other time). About one-half of our meadows are on high or undrained lands, and are very much improved by the use of plaster. Without fertilizing, they produce good crops for three or four years, and are then generally pastured one or two years, then plowed and cropped. On the low lands they last longer. The general rules for

Sowing Grass-seed are, timothy ⅔, clover ⅓, 6 qts. per acre, or clover ⅔ and timothy ⅓; the former to produce merchantable hay, the latter to improve the land. The best time to sow the seed is in the months of March and April.

The average acreage of Clover for the same time has been about 500 acres. The chief object of growing clover is to enrich the soil, which is best done by plowing under, and on our limestone lands this is practiced considerably. Clover hay is of little value for stock, excepting sheep; they do very well on it.

Hungarian Grass at present is grown in very limited quantities; the yield is generally very large, and, when properly secured, stock will thrive on it for a time.

Millet is less grown than Hungarian. On the low lands it grows so large that it lodges badly; on the dry lands it does much better; it makes excellent fodder, and should be cultivated more extensively.

Lucerne or Ever-lasting Clover.—Some experiments in growing this have been made by the writer; it yields an enormous growth of hay, but is not relished by stock as well as the native clover.

Corn Stalks.—Certain it is, nothing better than corn stalks can be fed to stock. The raising and care of this fodder commands a good deal of attention. If desired for summer use (when the pastures are short), sweet corn should be planted in the month of May; if for winter, plant the Hackberry, during the first half of July—a little later will do—in rows one way three feet apart; drop 10 or 12 kernels in a hill, 18 inches apart. The ground should be in good order. To make out the rows I use a small plow, and the same to cover the corn. The usual product grown is four to five tons per acre. Sowing broadcast has become nearly obsolete.

Pasturage.—About one-fifth of the lands are devoted to pasture. Red and white clover make the best early, and blue grass the best fall grazing. Meadow lands are largely relied upon for pasture.

WHEAT.

In the early settlements of this county wheat was largely grown, and generally a sure crop. About fifteen years ago the wheat midge suddenly made its appearance in this section, and in consequence of it, in some seasons we scarcely harvested our seed. Nothing that was done would prevent their ravages. During this period wheat could only be grown by sowing early winter, like the Mediterranean, on high, dry ridge land. This insect has been less destructive during the past two or three years. The principal cause of the failure of the wheat crop is climatic influences and injurious insects. The remedy is high cultivation, liberal manuring and underdraining, and plowing under plenty of clover. The best manure is plaster, ashes, salt, lime, and, on some land, barnyard manure.

The deterioration of the wheat crop in this county has of late years been very rapid. The great extremes of climate during the last two or three years has greatly injured the wheat crop. A favorable change of climate seemingly setting in, and injurious insects becoming less in number, we may hope to grow good crops in the future, by doing our duty in the cultivation.

Cultivation.—The various soils of this county require different modes of cultivation. On our dry or underdrained lands, under high cultivation, free from stone, one of the cheapest and most successful methods is to plow under a barley stubble. Plow once, in August, deep, narrow furrows, well pulverizing the soil. This plowing should be well done, the land well worked, and wheat drilled in about the first of September. By a proper rotation of crops summer fallowing can be dispensed with on this class of lands. Another successful way is to turn under a crop of clover. Meadow land in June grass must be plowed more than once.

On the high limestone lands of Margaretta, where wheat is made a specialty, and fine crops of a superior quality are raised, the land is summer-fallowed, plowing a piece of clover pasture, which has lain two years, in May or June, and on which a large flock of sheep has been kept. Harrow the land during the summer; cross-plow in August. Some cross-plow twice, which is better. Harrow the land well; drill in the wheat the fore part of September, one and one-half bushels of seed to the acre.

They universally sow from fifty to one hundred pounds of ground plaster the last of April or the fore part of May. Their main dependence is on the plaster, which will turn the wheat a dark green and make it grow very fast. If too much is sown, the wheat will be liable to lodge or rust. This course keeps the lands improving. The usual crop is from twenty to thirty bushels per acre. Some crops have been over forty bushels per acre.

Wheat is sometimes sown after oats, and occasionally after corn; good crops are grown in this manner, but as a general rule the practice cannot be recommended. Some fields are manured with well-rotted barnyard manure before sowing the wheat. This is practised more on high, dry lands, putting on a moderate amount of manure.

Varieties.—In former years white flint and blue stem were much grown; of late years scarcely anything is sown but Mediterranean, which has deteriorated very much in quality since its introduction.

I received from the Department at Washington some Tappahannock wheat two years ago. One quart, the first year, produced twelve quarts; the second year, eleven bushels. This variety is very early, not lodging at all; sowed close by the Mediterranean, which all lodged. It is a very early white wheat, with very stiff straw, and will, I think, prove valuable.

Spring wheat is grown to some extent on some soils, and very fine crops are sometimes raised. It is, however, inferior in quality to winter wheat, and its culture cannot be recommended on lands suitable for winter wheat.

The following will show the number of bushels of wheat grown in each township for the year 1867:

Township.	Acres.	Bushels.	Average per acre.
Oxford	521	5,574	10.7
Groton	1,224	19,468	16.0
Perkins	566	9,000	16.0
Margaretta	1,636	29,017	17.1
Huron	668	10,115	15.1
Milan	1,771	17,663	10 0
Berlin	651	10,032	15.4
Florence	410	6,625	16.1
Vermillion	337	5,562	16.4
Portland	3	60	20.0
Kelley's Island	5	67	13.4

The wheat crop of Erie county for this last year, 1868, will be in amount about the same as last year; there was more sown but the average will be about 13 bushels per acre.

Table showing the production of Wheat.

Years.	Acres.	Bushels.	Per acre.	Years.	Acres.	Bushels.	Per acre.
1858	7,821	125,757	11.8	1863	15,899	250,041	15 7
1859	10,512	175,212	17.0	1864	11,771	61,960	5.3
1860	13,105	250,711	19.1	1865	8,934	85,653	6.6
1861	14,478	231,842	16.3	1866	7,244	76,567	10.5
1862	17,995	308,694	17.2	1867	7,794	113,184	14.5

RYE

Is grown to a very limited extent only. The principal object in growing it at all is for the straw, which is very useful for a variety of purposes, such as tieing up corn fodder, and for tieing up young grape shoots in the summer, making mats for hot beds, &c. Rye can be grown on wet and poor lands to an advantage. It is not generally considered best to sow it on good wheat lands.

It is a profitable crop. The straw which generally sells for ten cents for a small bundle, and raised principally by our Germans, who often grow two crops in succession.

There is a spring variety which is sometimes grown for the straw. It is not worth much for grain.

Table showing the production of Rye.

Years.	Acres.	Bushels.	Per acre.	Years.	Acres.	Bushels.	Per acre.
1858	365	4,396	12.0	1863	26	424	16.0
1859	348	4,482	13.0	1864	151	1,054	13.0
1860	202	3,079	15.2	1865	173	2,523	14.6
1861	203	2,973	14.6	1866	273	3,517	12.8
1862	103	1,627	15.8	1867	203	2,169	10.6

BUCKWHEAT.

Buckwheat is grown in all parts of the county, but most generally in small tracts only. It is a great advantage in some respects. A piece of land which is wet or weedy can be ploughed in the last of June or the first of July, and sow one bushel per acre. It will grow so fast that it will smother all weeds, and large crops can be grown on lands on which no other crop could be raised. There is one difficulty attending the cultivation of buckwheat. If the land is too wet for any other crop, it will require much work to keep down the volunteer buckwheat, for it is a very rapid grower.

Good dry, sandy land is best adapted to it, but this quality of land is more valuable for other crops.

Some of our farmers select some wet or second class land, sow it with buckwheat two or three years, and then seed it down with barley or oats, which are not injured if sowed early. Some have made money out of this crop, by making a specialty of it, and putting it on good land. The demand is always in excess of the supply, and the flower sells as high as wheat flour. It is also, whilst in bloom, an excellent pasture for bees, which every farmer ought to keep. Much depends on the season; very hot weather will injure it; so will early frost.

Table showing the production of Buckwheat.

Years.	Acres.	Bushels.	Per acre.	Years.	Acres.	Bushels.	Per acre.
1858..........	781	12,376	11.0	1863...... ..	256	2,906	11.3
1859..........	559	9,391	11 3	1864.........	836	10,935	13 0
1860..........	497	8,056	18.2	1865.........	256	3,032	11.8
1861..........	527	8,085	15 3	1866.........	585	7,483	14 0
1862..........	243	2,654	10.9	1867.........	508	4,342	8.5

OATS

Are extensively grown, generally a profitable crop, and of late years have commanded good prices. Some are shipped from this county to other markets. Oats are always sown after corn and potatoes, and as a general rule, harrowed in a very slovenly manner, the greater part of our farmers considering any land good enough for oats; but this crop will pay as well as any other by good cultivation.

They are sown as early as the land is dry enough. Two or three bushels are sown per acre. There is not much danger of sowing too much seed, whilst there is danger of sowing too little. On our high, dry lands, where they can be put in early, they are generally a sure crop; but on our black, prairie and other bad lands, unless underdrained, they are a very uncertain crop, liable, if late, to be destroyed by grasshoppers, and in wet seasons, to lodge and rust, when the grain will not fill and of course be very light.

The climate of Ohio is too warm to grow oats of a quality that will make good meal.

Varieties.—Only the common varieties are grown: black, side and white Poland oats. There is not much difference in the yield of these varieties. Some seasons one variety yields better, and other seasons some other variety is most productive.

A winter variety has been tried and produced well, and of a superior quality, but is rather tender; besides, it is not worth while to raise winter oats when we can just as well raise winter wheat.

Table showing the production of Oats.

Years.	Acres.	Bushels	Per acre.	Years.	Acres	Bushels.	Per acre.
1858..........	6 007	72,312	12.0	1863..........	4,765	113,693	23 8
1859..........	4,802	141,366	29.4	1864..........	6,353	200,528	31.5
1860..........	6,635	253,430	38.3	1865..........	5,871	196,094	28.5
1861..........	5,367	139,239	25.9	1866..........	7,500	253,538	33.8
1862..........	4,694	129,428	27.5	1867..........	14,010	188,841	13.3

CORN

Is the great staple crop of this county, and nineteen years out of twenty yield a good crop. It is the most valuable grain crop we grow. The yellow and white dent variety, although not as large as the southern variety known by this name, but a kind peculiar to this locality, is the variety most generally grown. It is a well-known fact that Indian corn will acclimate more readily than almost any other cereal.

This plant is wonderfully well adapted to this climate. When our rains are heavy its broad leaves bend over and throw the water from the stalk, and in our great droughts they stand out and conduct every particle of moisture to the roots. The best way to raise corn is to double-plough in the fall late, or early in the spring, which will kill the worms. But most farmers like to pasture it with sheep during the winter and spring. Then it is the custom to plough deep about the 20th of May, and plant immediately, and the corn will generally get the start of the worms.

It is customary to put in corn with a horse-drill, having the stalks one foot apart in the row (rows four feet apart), and large crops are grown in this way, but unless great care is used in commencing early, heavy rains occur at this time, it will cost more labor to get the crop well tended.

Some plant in check-rows, so as to cultivate well both ways, and plant four grains in a hill, commencing early, or as soon as the rows of corn can be seen, with the small five-shovel cultivator, and cultivate both ways. When the corn is large enough, then it is worked with the double shovel plow, and the land kept mellow. Finish off in haying time.

One great advantage of this crop is, that it is fully equal to a summer fallow for subduing weeds. There is no excuse for allowing weeds to go to seed in a corn-field. It is advisable to have one piece of sod-ground to break up every year, but is not good economy to put manure on sod-ground and plough it under, for it would be put in too deep, and the ground could not be plowed well enough, for when sod is turned over it must be completely done.

The next year is the proper time to put on the manure. This ought to produce 100 bushels per acre, and, if under-drained, 150 per acre.

Table Showing the Production of Corn.

Years.	Acres.	Bushels.	Per acre.	Years.	Acres.	Bushels.	Per Acre.
1858	15,844	438,290	27.6	1863	14.202	253,024	18.0
1859	22,553	734,132	32.5	1864	15,883	402,178	25.2
1960	23,236	919,983	39.6	1865	14,948	501,322	34.5
1861	20,545	711,782	34.6	1866	15,888	394,801	24.9
1862	12,519¼	388,752	13.0	1867	14,055½	462,457	32.9

Corn should be cut up before frost and put up well in good-sized shocks. In two or three weeks husk out, and put the stalks into the barn or stack, well secured. It will then be equal to hay, worth nearly as much per acre, and will pay for taking care of early.

I am sorry to say this is not the universal custom, although it is practiced by our best farmers, and on the prairies much of the corn is left standing on the hill. They say they want it left on the land to keep it rich. There is some reason in this course, but would it not be far better to cut up the stalks, feed to the cattle, and put the manure on the land?

Some of these fields have been kept in corn for forty years. It was often the custom in former years to let corn stand out until spring, and thus get two crops of corn in one year, but neither of them a paying crop. Now-a-days it must be harvested in the fall, for it would be stolen if left out all winter. In former years corn was not worth stealing.

BARLEY.

Considerable barley is grown in Erie. One great advantage in growing barley is, that if the land is in good order wheat will succeed almost as well after this crop as upon a summer fallow.

The best barley is grown on good clean dry or under-drained black sandy or clay loam land, after potatoes or corn, on land free from weeds and grass, well manured the year previous. It should be sown as early as possible, and ought to be sown the last days of March. Sow the land as fast as it is plowed, dragging only one way, with 2½ bushels clean seed per acre. This plan will generally insure 40 bushels per acre, leaving the land in fine order for a crop of wheat. Barley injures land less than any other grain.

Barley should be allowed to stand until it is nearly all ripe, so as to be of a uniform quality for malting. I cut it with a reaping machine, bind, put it up in round shocks, capped like wheat. The grain should be kept dry and not exposed to the weather. It is a very difficult grain to dry if it gets wet. It is better if it goes through the sweating process in the mow or stack before threshing.

Our climate is too hot for this grain, but when the season is favorable it ranks among the most profitable grain crop we grow.

VARIETIES.

Spring Four-rowed Barley, Which is the best variety for this latitude, and largely cultivated, generally insures a crop, if put on the right kind of land and receives the proper cultivation.

Brewers Delight—A Two-row German Barley—Sent out from the Department at Washington, is a very large grain, largely cultivated in Germany, producing sixty to seventy bushels per acre. This variety grows taller and has longer heads. Some seasons it has produced, on my land, a large crop of superior quality of grain. Last year it rusted and lodged badly. It requires more time to determine its value.

Skinless Barley is a beautiful grain, not productive in this country, nor is it cultivated to any extent, and will not be cultivated in this country, as we seldom or never use barley for bread, as is the case in some portions of Europe.

Winter Barley was formerly cultivated in this county, but of late years it has generally been winter-killed, and is now discarded. Another serious objection is that wheat cannot be grown after it, with success, as the barley left on the land, after the crop is harvested, will come up among the wheat and spoil it.

Table showing the production of Barley.

Years.	Acres.	Bushels.	Per acre.	Years.	Acres.	Bushels.	Per acre.
1858..........	1,244	16,979	13.6	1863..........	948	16,930	17.3
1859..........	796	17,121	21.6	1864..........	1,815	46.761	25.7
1860..........	624	16,103	25.8	1865..........	2,585	45.373	17.6
1861..........	448	11,484	25.7	1866..........	2,115	34,461	16.3
1862..........	811	23,428	28.9	1867..........	1,051	16,574	15.7

It will be seen that there is a great variation in the number of acres sown and the amount harvested. There is also a great variation in the price and of the quality of the grain harvested. Good barley will always command a fair price.

APPLES.

Apples are largely cultivated, or rather grow without cultivation, for they are generally so abundant as to receive but little attention.

Orchards are planted and grain or grass are grown with the apples at the same time. This is a bad practice. The apple should be the main crop. The land should be well manured and cultivated, and occasionally seeded with clover, and pastured with hogs or sheep during the summer months. Sheep are much the best, eating and destroying the wormy apples, and stamping the land, manuring the trees, and killing insects. They must not be kept in too long at a time, for if the feed is short they will sometimes eat the bark of the trees, which can be prevented by smearing them with blood. Some farmers, by pursuing this course, raise large fine fruit, and do not complain of the deterioration of the apple, so common now-a-days.

Trees should be carefully pruned by cutting off some of the top branches, as well as the bottom ones, and not allow them to grow very high or too thick.

The apple moth is rapidly increasing. Thirty-six years ago not a wormy apple could be found, but at the present time a large part of them are wormy, especially when under poor cultivation.

Apples have failed, entirely, once since 1834. A severe frost on the last day of May, 1845, not only killed all kinds of fruit, but corn and most kinds of vegetables, and seriously injured wheat.

In regard to varieties, many apple seeds of good kinds were planted by the first settlers, some of them of French origin. Much of this fruit is of good quality, and some of superior merit. The following are most generally grown and considered the best varieties:

Summer Apples.—Early Harvest, Red Astrachan, Lowell, Summer Rose, Summer Queen, Lake, August, Michigan Harvest, Sweet Bough, Golden Sweet.

Fall Apples.—Fall Pippin, Fall Wine, Ohio Nonpareil Portor, Gravenstein, Maiden Blush, Fameuse, Saint Lawrence, Cayuga Red Streak, Alexander, Colvert, Black Detroit, Baily Sweet, Jersey Sweet, Spice Sweet.

Winter Apples.—Belmont, Baldwin, R. I. Greening, Peck's Pleasant, Westfield Seek-no-further, Canada Red, Esopus Spitzenberg, Jonathan, Northern Spy, Domine, King of Tompkins County, Yellow Bellflower, Roxbury Russet, Green Sweet, Tallman's Sweet, Ladies' Sweeting, Lyman's Pumpkin Sweet, Richmond.

There are over two hundred varieties of apples grown in this county, but farmers are beginning to learn that it is for their interest to plant the best only, as it is one of the surest and most important fruits that we grow. In seasons of plenty, live stock consume a large amount in the early part of the season, and it is considered of much value in giving the hogs an early start. A large amount is also made into cider. The best part of the winter fruit is put away or barreled and sent to distant markets, and is generally sold here at from $1.50 to $3.00 per barrel, according to the demand. There was reported last year 2,972 acres and 68,371 bushels of fruit, which was only a medium crop. This season the crop is not large; about the same as last year.

Pears.—Pears are grown extensively, both on standards and dwarfs, and in good seasons fine crops are produced. Standards do not bear as soon as dwarfs, but make much the larger and healthier tree, and bear better crops. They are grown upon all kinds of soil, but succeed best on a strong clay loam, well underdrained. The best manure is bones and ashes. They should make a steady growth, and not be stimulated with unfermented manures.

The varieties cultivated on standards are Bartlett, Seckel, Bloodgood, Buffum, White Doyenne, Buerre Diel, Buerre d'Anjou, Shelden, Clapp's Favorite, Sterne's Genesee, Glout Morceau, Dix, Columbia, Lawrence, Winter Nellis.

Dwarf pear trees worked on the quince, should never be set unless the owner expects to manure and cultivate them well. They require a good location, and if well cared for will produce fruit of a superior quality. The best varieties for dwarfs are Louise Bonne de Jersey, Duchesse d'Angouleme, Buffum, Flemish Beauty, Buerre d'Anjou, White Doyenne.

The fire blight has been very destructive in some seasons. This disease appears to be climatic; is generally worse after a dry, hot summer, followed by a cold winter, and seems to have some relation to the potato and grape diseases. It seldom attacks the pear tree before it fruits, and is more liable to it when under high cultivation. A slow, uniform growth is the best protection against its ravages. The disease will scarcely be seen for a number of years, and we think it has left us, when it will return and be very destructive. Many remedies have been recommended, but none of them, in this section, have as yet proved infallible.

Last year Erie county produced 850 bushels of pears. This year was very unfavorable; there was not half the crop of last year.

Peaches.—Of the many varieties of fruit grown in this county, none surpass this in quality or beauty; which of late has become so difficult to grow, but which was so abundant in the early settlements of this county. Peaches then were so plenty that they could not be sold, and the hogs were fed on them. The trees grew everywhere, and required no care.

They can be grown only with great care, on high ridge land. This year the peach buds were nearly all killed, on the morning of the second of February, by the cold—mercury 12 deg. below zero. A part of the hill of my peach orchard was above the frost line, and thus were saved over one hundred bushels of fine fruit. It was very interesting to see the trees so full of fruit as almost to break down, and not a peach to be seen twenty feet below this frost line. The crop around this orchard was a general failure.

The people here succeed best when their peach orchards are well cultivated, and grow no other crops in them. Nor should they be stimulated with rich, unfermented manure, but any kind of ashes, bones, old lime and leaf mould are good. Two quarts of old fish salt is best, carefully spread around a bearing tree in the fall, and is a capital thing for killing insects and invigorating the tree. The worms or young borers should be dug out, and a heavy coat of coal tar put on the roots one foot high. Lime should be put in the tar to neutralize the acid. Then put a little dirt around the base, and it is safe for two years. Or, put strong brown hardware paper tightly around the roots, one foot high; fasten with a small nail; put a little dirt around the base, and it is safe against the fly that year.

The best varieties are Hale's Early, Serrate Early York, Early Tillotson, Large Early York, Yellow Rareripe, Baltimore, George the Fourth, Norris Red, George Mignonne, White Imperial, Morris White, Orange, Crawford's Early, Lemon Cling, Washington Cling, Crawford's Late, Middleton Imperial, Ward's Late Free, Heath Cling. The yellows has never appeared in this county. The clay lands near the lake shore are not as suitable as the sandy and gravelly ridges a few miles from the lake. For the year 1864 there are reported 6,143 bushels. This season very few were grown.

Plums.—Some seasons plums grow well and produce a fine crop on the clay lands near the lake shore, but generally that little *Turk*, the curculio, makes his crescent mark on them early in the season, and they soon fall off. Hogs and poultry kept around the trees will lessen these insects considerably. By commencing early in the season and throwing slack lime over the trees in the morning, when the dew is on, will generally save the plums, if it is attended to closely. But the most effectual way is to build small fires near the trees in the evening, which will destroy them and many other insects; but it is a great deal of trouble, and will not be generally practiced. The varities are Green Gage, Washington, Damson, Egg Plum, German Prunes.

Quinces were formerly cultivated with great success, but of late years the quince has been very poor. This fine fruit is much neglected.

This fruit requires good cultivation and a rich, strong soil. The trees will not generally bear a good crop when peaches are killed in the winter.

GRAPES.

Grapes, though grown in portions of this county for twenty-eight years, have not, until quite recently, become an important agricultural product. Successful culture in vineyard, on Kelley's Island, gave the first marked impetus, and so rapidly thereafter spread the planting on the Island, along the water line of the main land and on the high land in the interior, that in a few years thousands of acres were devoted to grape culture, and soils and locations believed to be adapted to this interest rose in price from ordinary farm rates to hundreds of dollars per acre.

History.—In 1836, Mr. G. B. Hyde, of Vermillion, planted a vineyard of Isabella, near the lake shore.

A few vines had been set and fruited well on Kelley's Island previous to 1845. In that year Mr. Charles Carpenter set 46 Isabella and 40 Catawba vines. In 1850, he made 100 gallons of wine, and planted one acre of Catawba. This is believed to be the first acre of this variety planted in Erie county. Other like plantings followed tardily at first, but when profitable crops proved the wisdom of the undertaking, a wide area was soon vine-clad.

The uniform healthfulness of the vines and excellence of the crops continued almost unbroken until 1864–5. Rot among the Catawbas then caused alarm. In 1866, rot and leaf mildew appeared disastrously, and some crops were nearly ruined. The following year, however, restored confidence. There was little rot and a large crop of superior quality. Extensive shipments of grapes took place and a vast quantity of wine was made. 1868 had a sad history in store for the grape crop. The winter was unusually cold, with mercury on the 2d of February 11 degrees below zero. The spring was cold. The summer was remarkable for great extremes; and since grape culture began, we have never experienced so severe an early frost as occurred on the main land on the 7th of October of this year, and on Kelley's Island on the 17th. This quite completed the destruction, and the result was not more than one-fifth of a crop.

Diseases—The Rot.—The grape rot is involved in much mystery. Commencing the latter part of July or early in August, when the berries are one-half or two-thirds size, and growing rapidly, the infection spreads with amazing swiftness. At first there is a slight discoloration under the skin. Growth is checked, the berry turns black, and falls or shrivels. The Catawba suffers most from this disease.

It has been observed that the rot generally manifests itself in hot, murky weather, when heavy showers are frequent and cold nights beget heavy dews. In some instances a board 14 inches wide nailed over the trellis has been found a preventive. Fortunately, many varieties are nearly exempt from rot.

Leaf Mildew often accompanies the rot. Where it prevails, the vine is early stripped of its leaves, and neither fruit nor wood ripens. Some varieties are especially subject to it.

This mildew is a very minute fungus or parasitic plant, that attaches to the underside of the leaf and soon destroys it. A humid, hot atmosphere favors the growth of mildew. The vines need to be well attended and kept in a vigorous condition to assist them in resisting the blight, which generally attacks unhealthy plants.

These are the worst diseases met with in the cultivation of the grape.

Soil and Location.—It is a characteristic of the grape in Europe and no less in America, that it succeeds best on the banks of large rivers and deep lakes.

With us it succeeds best on the island and along the shore line, and deteriorates as it goes into the interior. There are, however, fine vineyards on the high ridges three or four miles back from the lake. In the western portion of the county, the soil seemingly best adapted to the grape is a hard, calcareous clay, with a limestone rock deep beneath. In the eastern section, a gravelly clay or clay loam, resting on bituminous shale, not far below, seems just as well suited to this culture.

Planting.—First and chief consideration as preparatory to establishing a vineyard, is thorough drainage, that the soil be firm and dry. As a rule, whatever the soil or situation, the chances of continued success are increased by underdraining. Deep double plowing, as from 12 to 14 inches, is generally practiced. If this has been done in the fall, cross-plowing in the spring puts the land in the best possible heart for setting vines. They should be planted deep to insure good foot-roots.

The rows are now generally made eight feet distant, and the vines six feet apart in the rows. Some even favor eight feet apart each way for the sake of increased light and air.

Trellising.—It is the custom, the third year after planting, to trellis on oak or chestnut posts. Set twenty to thirty feet apart in the rows with three and sometimes four vines. The total cost thus far, including draining, may be averaged at $200 per acre.

Cultivation.—Thorough cultivation only will meet the demands of the grape-vine. As a preparation for winter, the ground should be plowed towards the vines, leaving a surface drain midway of the rows. Early in the spring, this plowing is to be reversed and followed up through the season with deep working cultivators.

Pruning.—The first two years the growth of the young vines may be cut back to six inches from the ground. The third year, if the vine is strong, a single bearing cane may be left. In any case allow but small product for first year's bearing. Under judicious management, the vines. in the fourth year should be able to bear uninjured a full medium crop, A word of caution will not be out of place here. Experience teaches that the vineyardist's besetting sin is, the allowing an over-crop, especially in the first year of bearing. No sin, perhaps, more speedily finds its wages as death. Overtasked, enfeebled, a prey to disease, the vine is soon a cumberer of the ground.

The renewal system of pruning is the one adopted here. Two canes, two to three feet long, depending on the strength of the vine, are left for bearing, while the remaining canes are cut back to *spurs* to *renew* bearing canes the succeeding year.

Summer pruning consists now in merely pinching in the laterals and the leading shoots when growing too wild.

Training.—The canes left for fruiting are fastened to the lower vine of the trellis, giving them a nearly horizontal position. These having fruited are cut back for renewal from spurs, and the canes grown from the spurs of the previous year become the fruiting canes and are trained on the lower wire as before.

VARIETIES.

Catawba.—Two-thirds of the bearing vineyards are Catawba. This, when grown in perfection, is a fine table fruit and our principal wine grape.

Isabella is somewhat largely grown and shipped to distant markets, but is not esteemed for wine.

The Delaware is small in bunch and berry; valued highly for early market and for wine.

The Concord ranks as a vigorous, healthy and very productive variety. It loses little by rot and is proof against mildew. Good for table; medium for wine.

The Hartford is grown to some extent, is always healthy and productive and brings good prices from extreme earliness.

Iona has not much expectations. It is of fine quality but succeeds only in few locations.

Ives' Seedling is considered of good quality for its class, is strong growing, healthful and productive. Its wine is prized by those few who have yet tested it.

Norton's Virginia is hardy, perfects its fruit and yields a strong, fine, red wine, which improves with age.

The Rogers' Hybrids and many new grapes have been tested by amateurs, but the above are the principal varieties so far grown to much extent.

GRAPE PRODUCTS OF THE SANDUSKY DISTRICT.

The following interesting statistics were presented by Mr. M. H. Lewis, as the result of very careful inquiry:

The total number of pounds of Table Grapes shipped from the Sandusky region		1,822,000
Total number of pounds Wine Grapes shipped		260,000
Number of gallons wine pressed at Sandusky	150,000	
Number of gallons wine pressed on the Peninsula and Cawtaba Island	80,000	
Number of gallons wine pressed at Kelley's Island	105,000	
Number of gallons wine pressed at Bass Islands	65,000	
		400,000

Estimating eleven and one-half pounds of grapes for each gallon of wine expressed, gives the number of pounds of Wine Grapes pressed, as above, 4,600,000.

RECAPITULATION.

Total number of pounds of Table Grapes shipped	1,822,000
Total number of pounds of Wine Grapes shipped	260,000
Total number of pounds of grapes pressed into wine	4,600,000
Grand total crop of 1867, 3,341 tons, or pounds	6,682,000

MONEY VALUE.

Cash sales of 1,822,000 pounds of Table Grapes at 12½ cents per pound	$227,750
Cash sales of 260,000 pounds of Wine Grapes at 6 cents per pound	15,600
Cash value of 400,000 gallons of Wine (wholesale rate) at $1.25 per gallon	500,000
Cash value of 1,500 gallons of Brandy (wholesale rate) at $5 per gallon	7,500
Total	$750,850

The yield per acre (average) about two tons.

At an average yield of two tons per acre 6,682,000 pounds were grown upon 3,341 acres.

At a total cash value of $750,850, the income per acre is	$227
$227 is the interest at ten per cent. on	2,270
$750,850 is the interest at ten per cent. on	7,585,000
3,300 acres of ordinary farming land at $15 per acre will yield	49,500
$49,500 is the interest at ten per cent. on	495,000
Balance of income in favor of Grape land ($227, less $15) per acre	212
An increase of 1500 per cent.	

WINE.

The extraordinary increase of the grape crop has caused a like increase of the wine product—the Catawba chiefly supplies the wine of trade. Wines of excellent grades are made from many other varieties, but in limited quantities. Every year adds to their number and quantity. In fact, we may soon see the Catawba rivaled in amount and quality by several kinds, and especially by the Delawares.

While much wine is manufactured by individuals, in lots of various amounts, and sold to dealers either in the must or at a few months' age, it is becoming more commonly the practice to sell the grapes in bulk, at a given rate per pound, to large companies formed upon the European plan, of buying all their grapes and devoting their entire energies to the manufacture and sale of wine in large quantities. This enables them to employ men eminently skillful in the manufacture and handling of wines, and conversant with the best markets in the country. Besides, they reach a more uniform and higher degree of excellence by treating must in such large quantities. Casks of 800, 1000, and even 1500 gal. capacity are common in their cellars.

The demand for wine the past season has been good and on the increase, so that the wholesale market is commonly cleared by the time the wine has completed its first year. Sales of first quality commonly range at $2.00 per gallon.

Each lot of grapes is tested by the saccharometer as brought in, and the price is gauged by the weight on the must scale. Thus, if 85° is adopted as the standard (for this varies with the season), and 6c per lb. at that weight, if a producer brings in a lot whose test is 95°, he will realize 7c, as the price increases 1 mill for every degree above the standard.

The Kelley's Island Wine Company has a capital of $100,000, and is making good dividends. They put up, last year, 67,000 gallons; this year only 12,000.

The Sandusky Company manufactured nearly as much as the former last year, and this season 13,000 gallons.

The assessor's returns for 1867 show 115,038 gallons, manifestly too low an estimate.

POTATOES.

Potatoes are largely grown; surplus crop sent South for a market. High, dry, sandy, gravelly or limestone loam, only moderately manured with common manure, is considered the most reliable land to raise them. Ashes, lime, plaster, salt, if moderately used, are beneficial; it requires, however, some judgment and experience to use them in proper proportions. It is better to raise a fair crop of medium-sized tubers of good quality, than have them overgrown, coarse, and unfit for the table.

A clover sod, double plowed, is considered best, which makes a fine bed for the potatoes, only requiring some ashes or plaster to produce a good crop.

As a general rule, very early planting is the safest and best course to follow, especially for the Peach-blow, which grows all summer. For very early potatoes for market, furrow the ground three feet apart; put in a little old, fine manure two feet apart in the row; take good sized sets, cover them up in the manure with the hand, then put on with a hoe three or four inches soil to prevent freezing. Plant as soon as the frost is out of the ground. We generally commence digging about the first of July.

The main crop is generally planted in hills, from 3 to 3½ feet apart each way, with land furrowed out lightly one way, planting across the furrows with a medium-sized potato, or one or two cut pieces, in a hill, covered two or three inches deep with a hoe. The land should be well worked with hoe, cultivator and plow; the potatoes dug early, before the fall rains commence.

Some fine crops have been grown this season by planting single eyes; if more than one sprout came up, planting it out also. This is a good way of testing varieties, when the seed is scarce and dear.

There is quite a fever about varieties. The Peach-blow is the best. Last year paid $3 per lb. for Early Rose seed. Mr. Brezee's No. 4 is now held at $50 per single potato. Next year we may expect to hear $100 asked for some new, untried seedling potato. It will take years to properly test these new varieties.

Past experience has shown that high-priced grape roots and other new, high-priced horticultural productions have generally proved failures.

Best early varieties grown here are Early White Sprouts, Buckeye and Neshannock. The Early Rose has not, on my ground, proven extra early, nor was the quality for the table as good as the Neshannock or Peach-blow. The quality was, however, fair; will undoubtedly prove valuable for a medium, early and main crop, as this variety appears very healthy, is a strong grower, the potatoes set close to the vine, and are easy to dig. Early Goodrich good sometimes; not to be depended on in all seasons, either for quality or yield.

The Neshannock produces good crops, if planted very early, on our sandy ridges. This and the Peach-blow are our best table varieties.

Harrison, Pink Eye, Rusticoat and Orono appear to be very healthy, producing fine crops; quality fair. Gleason, quality poor. Cusco, strong grower; yields enormously; quality not very good.

Unless they have some new seedlings of better quality than I have seen, they are not so much an acquisition as some people suppose.

There are really but few varieties worth cultivating, to any extent, except for speculation, to sell again.

Table showing the production of Potatoes.

Years.	Acres.	Bushels.	Per Acre.	Years.	Acres.	Bushels.	Per Acre.
1860........	1,803	208,756	116	1864......	987	94,744	96
1861........	1,252	110,068	88	1865......	1,310	137,877	105
1862........	976	75,206	77	1866......	1,153	104,060	90
1863........	914	90,304	99	1867......	1,605	135,886	85

The potato crop ranks as the third crop, in point of value, for a series of years, and, in some particular years, second in value sold.

The rot and mildew, which has troubled us in some seasons, has not prevailed to any great extent during the two last years, which have been hot, dry summers. This disease is climatic, prevailing worst in wet, hot seasons, when it will destroy whole fields in a few days.

SORGHUM.

There is considerable cane grown, and a large amount of syrup manufactured, which has been a great saving, particularly during the war, and will be again if prices keep up as they now are. But the cultivation is decreasing since the war. The people are careless in the cultivation of the cane, and generally let it stand too long, and the saccharine matter is wasted in the formation of seed. It should be cut up before the seed is filled. Most of the sorgo was greatly injured by the great frost of the 9th of October, 1868, but notwithstanding, it has made a tolerable article of syrup.

There is much difference in the quality of the cane grown on high dry limestone land, which is the best; the next best is grown on high sandy land. Our black, rich land produces an enormous growth of cane, but of poor quality. Growers of cane would find it to their advantage to pay more attention to this subject.

The Chinese cane is mostly cultivated, and is generally considered the best for syrup. The African Imphee is cultivated by a few people, who are pleased with it. The cane is crushed in the common iron sugar mill. The cane juice is strained, clarified and carefully evaporated. Four hundred and thirty-two pounds of cane sugar was made last year, and it is hoped that we shall be able in the future to make it from this variety of cane, even if it is not quite as good as southern sugar. The great difficulty appears to be that there is a gum which prevents the sugar from graining.

Table showing the number of acres, pounds sugar and gallons syrup.

Years.	Acres.	Pounds sugar.	Gallons syrup.	Years.	Acres.	Pounds sugar.	Gallons syrup.
1862........	114¾	8	13,037	1865.......	273	107	37,204
1863........	178	775	18,679	1866.......	25¼	63	27,621
1864........	313	23	40,720	1867.......	85¼	432	5,894

BEES

Are not as plenty as in former years, nor are they as profitable. The two last years have been too dry; the blossoms dried up. Bees have not made much money, and many of them have died in consequence. There are a few Italian bees in this county, and the owners claim great superiority over the common black bee. They are reported not as liable to sting as the black bee, and to gather honey from red clover (which is at least doubtful), and are said to be more industrious. They are of a yellow color, and larger than the common bee.

Langstroth's patent, or the movable comb hive, is a great improvement over the old hives. The great variety of fruit and other flowers, basswood, buckwheat, and a large variety of wild flowers, afford good feed for them, and if the season is favorable, they store a large amount. They do not increase as fast as formerly, and more swarms are lost in the winter, and are of late years quite subject to the bee moth. There are some wild bees, and, strange to say, the moth will injure them in our highest trees.

SWEET POTATOES

Are cultivated some in this county. There are no returns by the assessors. I therefore will state some facts from my farm journal. I grow them on warm sandy land, sheltered by forests from the north and west winds. My crop this year was 672 bushels, and one hundred thousand plants for setting. There were several hundred bushels grown by other persons in this county.

This valuable esculent is easily grown on our warm, sandy lands, has no insect enemy, and is not liable to any disease, while the common potatoe is often destroyed. Plant the sprouts from the 15th of May to the 10th of June. Warm sandy or gravelly land is best. Plant in ridges 3½ feet apart, 18 inches in rows; ridges must not be too large.

The best potatoes are grown in hills 3 by 2 feet, with a light shovel full of fresh compost or some fine manure put in each hill. Rich, moist black land thrown into large ridges, will cause them to run to vines, and the potatoes will be worthless. The vines should not take root.

I have succeeded in keeping sweet potatoes through the winter for the last twenty years. Dig them the last days of September, before frost, on a warm day; put them in medium-sized round heaps of 10 bushels, put on plenty of straw, cover lightly with dirt, and leave a hole in the top of the heap for ventilation. About the first of November put them in barrels without bruising, remove carefully to the sweet potato room with a stove in it, put a light covering of moss on top of the barrels, and stow them away. Keep up a uniform temperature of 50 to 60 degrees. Sweet potatoes carefully handled, put in a barrel in a warm room, will keep most of the winter for family use.

Varieties.—The best variety cultivated here is the Yellow Nansemond. The Lebanon Yellow is nearly as good. The true Tennessee Red is a good early variety. The long Common Red is worthless. I have also a white variety which is early and good. The Red Bermuda Yam grows very large, but is a coarse variety. The Brazillian Yam is of a light pink color, grows very large, and is the best variety of this class. The quality good for its class, and keeps well.

INSECTS INJURIOUS TO OUR CROPS.

Insects are rapidly on the increase. Every crop has one or more insect enemy to prey upon it. It seems to be the duty of the cultivators of the soil to give this subject more attention.

Wheat Midge, some seasons, nearly destroyed the wheat crop of this county. In years past it would swarm out of the ground in countless numbers, laying its eggs on the soft young grains of wheat; the larvæ sucking out its substance, the grain shrinks and is of little value. The transformation of these insects is performed in the ground, when they reappear the following summer. They are now gradually but surely disappearing; probably some insect enemy is preying on them. We now begin to hope for fine crops of wheat again.

Hessian Fly, another imported insect; has been in the country a long time; not as destructive as the midge. This fly deposits its eggs near the root of the young wheat plant early in the fall, the larvæ feeding on it; has not done much damage of late years. Late sowing is a preventive, but the remedy is worse than the disease, causing winter-killing. Liberal manuring and high cultivation is the best remedy.

Cut Worm is very destructive in the garden, eating off the favorite plants of the gardener. It has this season proved very destructive in the field, eating up many fields of young corn planted on sod land. Slovenly cultivation breeds them. The best remedy is clean cultivation.

Plowing the land late in the fall during freezing nights, will kill most of them and the wire worm.

White Grub.—This worm will sometimes destroy acres of meadow and pasture. It is very destructive in strawberry beds set on sod land, eating them off about the time of ripening of the fruit. There is no remedy, as they lie in the land three or four years. They are best killed by good cultivation during the summer, when they are close to the surface. In the fall they descend 12 to 18 inches deep, and cannot be killed by fall plowing. Hogs, poultry, especially crows and blackbirds, destroy great numbers.

Potato Beetle has been of late years, during the months of August and September, very destructive, eating the foliage of the potato as well as cabbage. They are a good-sized, black-striped beetle, and can be generally driven out of the field by whipping them off the vines; killing some causes the others to leave. Poultry will not eat them.

Canker Worm is a large caterpillar, and is very destructive to the foliage of the trees in the eastern States. It is already well established in some places in central Ohio, where it has been imported from the eastern States. Some few specimens are seen in this county. They spread slowly, always remaining in the caterpillar state; living in the ground during the winter, and creeping up the trees and eating the leaves during the summer, often stripping the entire foliage from the trees.

Tent Caterpillar is increasing very fast, and is seen in great numbers in some places on our forest trees, is a great pest in the orchard, is easily destroyed, and should be done when first seen, when the nests are small. In this way I keep my orchards entirely clear of them.

Codlin Moth has done great injury to our apple crop of late years, by laying eggs in the calyx of the young fruit, the larvæ living on the apple, causing it to drop prematurely. Hogs in the orchard, or a large flock of sheep, will most effectually destroy them, put in, during the summer months, when there is plenty of feed; but they must be watched a little, if the feed gets short they may bark the trees.

Squash Bugs are very destructive on the vines of squashes, melons, cucumbers, &c., are generally first seen during some warm day, the last of May or the first days of June. There are four varieties. Only one of them has increased sufficient, as yet, to give us much trouble. There are many nostrums recommended to prevent their destroying the vines, which are mostly useless. The application of these nostrums cost more than to kill them. They are easily killed early in the morning, before they can fly. There is generally a second brood of them.

HORSES.

The number of horses are increasing and the quality improving. We now have in this county about 6,000, average value (for taxation), $70.

In the past few years quite an improvement has been made, yet a great majority are still light roadsters, and are really not the thing for the farm. We hope for an early introduction of the Norman.

MULES.

We only have about 100 in the county. Average value, $55.

CATTLE.

We have about 9,500 head of cattle—average value, $28. But few farmers in this county make cattle raising a speciality, and their business in this direction is not large, yet they have their barns and stables well arranged for the purpose, and, notwithstanding the high price of hay and grain, make quite a success of it. A majority of the breeds are *natives*. We have a few *Durhams*, they are the favorites for beef, while *Devons* satisfies the fancy for "red cattle," and are found in greater numbers. In selecting *milch cows* very little attention is paid to the *blood*, if any preference is shown it is for graded Durhams.

SHEEP.

We had, in the spring of 1868, about 66,000 head, (about 5,000 less than in 1867)—average value, $1.50. We have a large number of the most valuable kinds, the grades are of the best, no county in the State raises a better wool clip. The high prices of feed and low price of wool have discouraged the wool grower, and less interest is manifested in the care of sheep.

SWINE.

We have about 8,000 head of stock hogs—average value, $3.25. Breeds are mostly made up of Suffolks, Berkshires and Chester Whites, the last named, if pure bloods, are valued the highest.

DOGS

Are plenty enough. 1,462 is the number that we have to support in this county, and are about as worthless stock as we have on the farm. The assessors returned $906, last year, as the amount of damage done by dogs to sheep. If people must keep dogs, would it not be well to keep rat terriers, and keep them in the house? They will not then kill sheep, will soon rid a farm of rats, and be of some service. In former years I suffered severely by having my sheep killed by dogs. By putting strychnine on the dead sheep, the second night after they are killed, the dogs will come, and certainly get killed. I have not been troubled of late years.

WOLVES.

In the northwestern portion of this county, some six or eight wolves came in and settled over a year ago. They have beaten the dogs and killed over one thousand dollars worth of sheep. A good many hunters have been out after them, but as yet only one wolf has been killed. Dogs will not follow them, neither can they be poisoned, nor does there appear to be any way of destroying them. When they kill the sheep they suck the blood and never return. In the spring they take the lambs for their young ones. They have killed off most of the rabbits.

BUTTER

Is usually made on all our farms, but is not made a speciality. Generally from five to ten cows are kept on a farm. The butter is of good quality, and a surplus is sold from most farms. Great care is taken to have everything clean and sweet that comes in contact with the milk and butter. The common six quart tin pans are in general use. Some of our Germans use stone crocks, which they consider cooler than tin pans. The milk is generally allowed to stand from twelve to twenty-four hours for the cream to rise; and the cream must not be allowed to sour to make first rate butter.

There is a great variety of churns in use, but none are quite satisfactory. It is quite difficult to state how much butter a cow will make, for there is so much depending on the cow and her feed. But they generally produce from four to eight pounds per week per cow. Most of the butter made in the west part of the county is consumed in Sandusky. The price of good table butter has been from forty to fifty cents per pound, for the last three years. There is more butter made in the east part of the county, but that is generally sent to the Cleveland market.

Not much attention is paid to the breed of cattle for the dairy; farmers prefer good sized cows, and give the preference to graded stock. Cows are not generally taken care of as they should be, some of our best farmers, however, stable them and give them plenty of feed, and always get well paid for their trouble.

CHEESE.

Cheese was formerly made in considerable quantities, but of late years the production has steadily declined, and this season there were but 7,045 lbs. reported, and nearly all of that made in one township. There is no cheese factory in our county. This loss in the production of cheese is to be regretted. The time has been when our farmers made cheese and used it, too; but now if they use cheese, nine out of ten must buy it.

Table showing the product of Butter and Cheese for eight years.

Years.	Butter—lbs.	Years.	Cheese—lbs.
1860	358,547	1860	57,354
1861	347,633	1861	31,315
1862	260,292	1862	34,647
1863	236,820	1863	22,070
1864	236,070	1864	22,700
1865	238 725	1865	21,901
1866	316,975	1866	12,450
1867	228,475	1867	7,045

This table shows a rapid decline in the production of cheese. Proving that the large cheese of other counties, which are factory made, are in better demand and are superceding our small cheese made by our farmers, and in fact, there are none other in the Sandusky market.

STRAWBERRIES

Are the earliest as well as the best of all the small fruits. New lands are much the best for this delicious fruit, but it will grow on almost any soil that is rich. Most kinds of manure suit it; leaf mould from the forests is good, but ashes is the best manure. All lands should be double plowed to the depth of one foot. Old pasture land is the best for them, but there is some danger of the white grub destroying the vines. Plantations are best made in the spring. Set one foot apart in the rows, and the rows three feet apart. Cut off all the fruit stems, and let them make but few runners. Or, they are sometimes set two feet each way and cultivate both ways with the little strawberry cultivator. Cultivate well and hoe out all grass and weeds. Cover in December with straw leaves, leaf-mould or old hot-bed manure. The varieties most in cultivation are: Wilson's, Jucunda, Ada, Russell, Chas. Downing, Green Prolific, Triomph De Gand, Scott's Seedling, McAvoy's Superior, and Iowa. A large amount of this fruit is grown in this county and shipped in all directions according to the market.

RASPBERRIES

Are grown to some extent but the market is not well supplied with this fine fruit, and much confusion exists in regard to varieties. Doolittle's Black Cap is grown for market and is a fine fruit and firm enough for shipping, but unfortunately it is rather tender, not bearing full crops when peaches are killed in the winter. This variety is considered of superior flavor to the red raspberry. In the interior and southern part of the State it is considered quite the reverse.

Portland is a red raspberry, and considered here as one of the best of the Antwerp family, and is our most hardy variety. It has not failed to produce a good crop on my land for the last fifteen years.

Philadelphia is a new red berry that has been cultivated but little, but has given good satisfaction. The canes branch considerably and bears a large crop of medium quality of fruit rather difficult to pick close to the stem, and breaks in picking. It is perfectly hardy and one week later than the Portland.

Clark is a new large red berry, nearly the size of the true North River Antwerp, and appears to be perfectly hardy, and is a great acquisition, and the berries are firm and will bear transportation.

Lum's Everbearing Black Cap is a good black kind and bears a good crop at the usual time and also a fine crop in the fall; has but few thorns and is not such a rampant grower as most kinds of this variety.

Brinkle's Orange is a splendid light-colored fine variety for amateur cultivation; also the Hornet, but they require to be covered in the winter.

The raspberry requires a rich, moist soil, double plowed and well manured, planted four feet apart each way, so as to cultivate both ways, tied up to stakes and cultivated like corn, and let three or four canes stand. Allow no suckers to grow. If this course is pursued they are easily cultivated, and will last eight or ten years if the land is in good order.

Blackberries are not much cultivated, but pay well when they bear. They will not bear much of a crop.

Lawton is the variety that is mostly grown, and, in some seasons, an enormous bearer; fruit large. It is sour before it is fully ripe, but of excellent quality when fully ripe.

Wilson is a great acquisition, has a medium sized bush, and is not so rambling and strong a grower as the Lawton; very productive, the fruit large size, and is especially valuable. The fruit ripens before "peach time," and mostly ripens at once; about as hardy as the Lawton.

Kittatinny is a promising variety, and rather more hardy; but the fruit is later and not quite as large, but is very sweet. Blackberries should be planted eight feet apart, and four feet apart in the rows, and are the most productive on high, dry, sandy land; but the land must be moderately rich.

The largest fruit is, however, grown in moist, rich, black, sandy soil, but is more liable to winter-kill.

MELONS.

Musk Melons.—This fruit is very easily grown, especially the yellow-fleshed variety. The Rusty Coat is the earliest and most commonly grown, but is poor in quality. There are two or three varieties of French melons of this class, which are large and fine. There is one variety, which is the largest variety grown, and is very good.

Green Citron.—This green-fleshed variety is much the best in cultivation (this name seems to be an improper term, but it is the name by which it is sent out from the Eastern seed stores), and it is the most difficult one to grow, requiring a fine, rich, warm, sandy soil, and plenty of good manure in the hill. A compost of fish offal, well mixed with the soil, suits them best.

Water Melons are grown largely, and are of first rate quality.

Mountain Sweet is much the best, but it is quite late, but always looks and sells well. We have a sub-variety of the Black Spanish, which is quite valuable, a medium-sized, long, black, thin-rind melon, which is decidedly our best early variety. Ice cream, Black Spanish and Green Mountain are all good red-core varieties, especially the Green Mountain, which is very large and of superior quality.

Some seasons splendid crops are grown on old pasture land, double ploughed, which makes a fine bed for them, but wants a little fine old manure put in the hill. On our old sandy fields, which have been under cultivation a long time, the black, mucky, new soil, hauled out in the winter, suits them well.

Squashes.—Fish offal is the best manure; are generally planted about the 20th of May, and require warm, sandy land. Will not grow in cold, wet land, especially the Hubbard squash. There are a great many *planted*, but not many *grown*. The Hubbard is the best for late winter, and the Boston Marrow for late fall and early winter. There is a great variety of them—Valparaiso, Turban, Yokahamo, Sweet Potato. The French is the largest and will grow in a colder soil than most other varieties, and is grown near Paris, where no other squash will ripen. Immense crops can be grown of this variety, which are profitable for feeding stock.

Carrots cultivated somewhat as a field crop, are generally sowed the last of May in drills two feet apart, and the small cultivator run between the rows, and are kept clean from weeds. The land must be heavily manured, when a large crop can be grown of six to eight hundred bushels per acre, which are very valuable as feed for all kinds of stock, and should be more cultivated, but the land must be rich. The Long Orange and White Belgium are the best.

Sugar Beets.—This and some other varieties are cultivated on a small scale by our German farmers, and are quite valuable for feeding stock; and their cultivation is too much neglected.

Tomatoes are largely grown for market and shipping. Some farmers raise 100 bushels a season, and they have of late years become an important article of food. It is of the utmost importance to have them early, and they are generally started in a hot bed the last days of February.

The best for early market are Key's Early and Early York. Tilden is best for late. Some like the Fejee, a pink variety, quite smooth and good.

Turnips are not largely grown. In former years, when the land was new, a large amount was raised, and many fed to stock. New land is the best, but good crops can be grown on our sandy lands which have plenty of manure. Fine crops are generally grown after early potatoes.

The best varieties for the table are French Cow Horn, a long variety, Early Strip-leaf and Yellow Aberdeen; for stock, White Norfolk and other large varieties. They should be sown from the 10th of July to the 15th of August.

Ruta Baga are the best to keep for spring use, and require strong land, with plenty of manure. Fish offal is the best, which will make them brittle and good. They should be sown from the 10th of June to the 1st of July, and are worked the best in drills about two feet apart, with small cultivator to run between the rows.

ROADS.

The roads of this country are proverbially the worst in the world. It is said that in England they wear out the roads; in this country they wear out the horses. The country is old enough and the materials are sufficiently abundant in most places to make excellent roads; therefore, it is a matter of surprise that no more attention is paid to the construction of good roads by the people who are so much interested. There is no economy in bad roads; they cost the people more than to construct good ones; bad roads require more than double the amount of teams to do the same work that good roads would require.

Something has been done of late years in attempting to construct stone roads around Sandusky and some other places in this county. There is some fifteen miles of stone road costing from ten to fifteen hundred dollars per mile, generally very rough and imperfectly constructed; also a private company has some ten miles of gravel road which is generally good. They collect toll.

Some of our roads are almost impassable some portions of the year. Much depends on the supervisors who are often selected without any regard to their qualifications in road making, which is so important for them to understand. If they do not understand the right principle of road making they make bad worse.

I know by experience that if a supervisor does his duty, gets the people interested in the roads, constructs them in a good permanent manner we can, even with the present imperfect laws, keep them not only in good order, but gradually stone them, make them better from year to year with permanent improvements, and the people be better satisfied. We also should put in township trustees who are liberal and will assist in this matter.

A bad system formerly prevailed of working on the roads once a year, no matter how bad they were. We now find it economy to work on them when they need it. A small hole which will cost ten cents to fill will, in three months, cost one dollar. Another bad plan prevailed of putting stone in a mud hole which was sure to make two—one on each side, where the stone was put.

Good drainage is the first principle of road making. Not only should we drain the road but the lands adjoining as much as possible, thereby improving the land as well as the road. The road should have a sloping bank with the ditch as far over as possible from the road bed.

In constructing stone roads it is very important that we get a good road bed at least one foot deep, which need not be broken fine. Twenty years ago, I constructed a piece of road by putting in twenty inches of limestone without breaking, covering it six or eight inches with chips from the quarry. This road has never cut through, requiring but little repair, and is good yet.

We have constructed some roads which work well in the following manner: Commencing on the right hand side leading to town, put down a heavy road bed, not less than eighteen inches, of hard blue limestone, breaking them course, six or eight inches square; make the road bed twelve or fourteen feet wide; then cover six or eight inches with broken fine stone. Make a dirt road on the left hand side ten or twelve feet wide, by scraping up both sides, also banking up against the stone. This makes a dirt and stone road combined; sometimes one is the best, sometimes the other prevent much of the wear of the stone road; also makes good drainage which is so important.

There are objections to the English McAdam plan of putting eight or ten inches of fine stone on our black mucky soil; breaking the stone fine is expensive and teams will cut through. This plan will answer on firm dry soil.

Round boulders or large uneven stones put in promiscuously among small ones will work up to the surface and injure the road.

Roads should be made wide. Dirt roads should be thrown up before harvest. What we do on the roads should be well done.

The long road scraper in general use in some townships, drawn over the road occasionally at the proper time, will fill the holes, make the road smooth and in fine order.

We make our small culverts entirely of stone bottom and sides, covered with three or four covering of flagging stone, with a foot of fine stone on top. This will last and should be put down deep.

TIMBER.

The forests of this county are hardly excelled in any country, in variety and good quality of timber. Much now is of second growth and is largely used by manufacturers.

Black walnut is our most valuable timber. Some trees are 130 feet high, 4 and 5 feet in diameter; also white oak, white wood and chesnut timber about the same size. Burr, black, red, yellow, and pin oak, sugar and soft maple, white and red elm, black and white ash, wild cherry, hickory, &c. There was formerly a large amount of the best of red cedar on Kelley's Island and Cedar Point. The writer has cut trees on Cedar Point 500 years old (by counting the layers of wood) and ninety feet high. Some cargoes of this and black walnut have been shipped to England in bulk.

FUEL.

There is no bed of stone coal or peat in the county. Considerable stone coal is used in Sandusky and Kelley's Island, none on the farms of the main land. Less than one-fourth of the land is in timber, so we must stop wasting it and take care of what we have left. We already see in the decrease of our grain crops the bad effects of letting in the cold winds. On this account it is bad policy to keep less than, at least, one-fourth the land in forest, and in many places it is time to take care of the young trees, and to plant young trees for timber and fuel. Seventeen years ago the writer of this article set out one acre of yellow locust, which are now thirty-five to forty feet high, and could be cut to advantage for posts. The young trees are springing up all around in the forest. This variety is of very rapid growth, and is the most valuable tree to plant for fuel or for timber, and is almost equal to red cedar for posts. On our prairie lands belts of evergreens should be planted for timber and to break off the cold west wind. The Norway spruce is the best, and a fast grower. Without any extra care, I have grown this variety twenty-two feet high in ten years.

FENCES.

The old crooked rail fence is the principal one in use, and was the best that could be made in the early settlement of this county, and will remain in use as long as it lasts, but will never be repaired with new rails, to any extent, from the fact that the wood, in most parts of the county, will sell for more money than good pine fencing boards will cost, that will make much more fence than the tree would.

In an early day, much fence was made of pine lumber and red cedar posts, on the prairie, which was, even then, considered cheaper than to haul rails five or six miles, at a nominal price. Red cedar was formerly grown on Cedar Point and Kelley's Island, and cut in great quantities and sold for twelve to fifteen cents apiece. There is a large amount in the county, which will last a long time.

In some places oak logs are hauled in and sawed into fencing, which is considered more durable than pine, but is liable to warp and break the nails. Pine is generally the cheapest and best in the end. A good fence can be put up with burr oak or chestnut posts for one dollar per rod.

HEDGES.

There is no fence to be compared to a well-trained hedge. Still, even in England, many hedges are not well trained, and are a nuisance. Osage orange is one of our largest Southern forest trees, and is liable in extreme seasons to be winter killed, besides requiring considerable attention to keep it dwarfed-in suitable for a hedge. Another objection is, the field mice will, in some winters, eat the bark from any kind of bush in deep snows, and would soon spoil a hedge.

Hedges are not in general use in this country, and it is considered that a good pine board and bur-oak post fence, which can be built for $1 per rod, is the cheapest and much the best fence. But there are some of our English farmers who, in remembrance of their homes, take great pride in the cultivation of a fine hedge, which certainly adds much to the beauty and variety of the place, and is, to say the least, very commendable. There are a few really fine hedges that are all that can be desired for a good fence. The great defect in hedges in this country is that they are not thick enough at the bottom. This is remedied by keeping the young plants cut down while small until they get thick enough.

The best hedges in this section are made as follows: Plant eighteen inches apart; cultivate well for three or four years, without pruning; then cut them about half off, near the ground; lop them over in a line of the fence, at an angle of 45 degrees. They will then sprout from the bottom and all the way up on the main stalk, and make a hedge so thick that a bird cannot fly through it. Our best hedges are pruned once or twice a year, and the bottom kept thick.

AGRICULTURAL MACHINERY.

Threshing.—Wheat and other grain is universally threshed by the common eight or ten horse-power threshing machine, wheat costing from 5 to 6 cts. per bushel, and other grain in proportion. The owner of the machine usually furnishes two hands and four or six horses. The owner of the grain furnishes from eight to twelve hands and from four to six horses, boarding men and horses. Threshing wheat will cost in this way from 15 to 20 cts. per bushel, and other grain in proportion; and is generally threshed during the months of August and September.

Wood Sawing—Is now done on most farms by the two or three horse-power sawing machines, using the drag saw for large logs and the circular saw for limbs—the owner of the machine operating it on the different farms, where the general price is from $6 to $7 per day, and sawing from twenty to thirty cords of stove wood per day. The great advantage of this way of sawing wood is that all heavy, knotty logs can be worked up, the machine cutting through the worst hickory logs without any trouble.

Mowing Machines and Reapers—Are in universal use on most of the farms, and a variety of patterns are employed, all of which seem to do their work very well. Most of our land is level and well adapted to their use, especially where the land is underdrained, and no heavy, dead furrows to cross, which is a serious objection on our level lands. Hay can be put in the mow in much better order with the mowing machines, for we can cut grass in good weather only, and less when the weather looks unfavorable.

The sulkey steel-tooth horse-rake is in general use, and ranks among our best agricultural tools; a boy being competent to manage it and do the heavy raking, which is considered a pastime rather than labor.

In fact, all the best improvements in agricultural machinery are in general use in this county, which lessens the physical labor materially, and farm labor is so much more pleasant now than it was twenty years ago, that we ought to rejoice at the change.

FARM BUILDINGS.

Houses—Are not generally constructed of the most durable material, or in as substantial a manner as should be in a country settled so long, and where the farmers are comparatively rich. Sometimes otherwise neat houses are set up on wooden blocks. It would be far better to construct houses of brick and stone, with good cellars under the whole, for a farm house cannot get too much cellar room. There is a great tendency toward a style of architecture, at the present time, which strikes the reflecting man as being out of proportion with the condition of the farm itself. It would be better not to adopt the fashions of the day in the construction of houses, but make them in a plain, substantial manner, so that they will last a lifetime, and construct them according to the wants of the farm.

Barns.—There is much improvement, of late years, in the construction of barns, especially in regard to making more stable room for stock, and this is certainly a most desirable improvement, as stock will not require near so much feed if well housed in cold weather. Our German farmers set us a good example of building small, warm, substantial farm houses, and large, well-constructed barns, with good stable room for all their stock. They do not believe it the best policy to permit their stock to stand shivering and exposed to the cold north-west storms.

It is sometimes the custom (and should be always when a quarry is near) to put an under room for stable or vegetable manure, etc. It will pay to keep manure under cover, but this is little thought of in this section, yet is of much importance.

Farm Gardens.—These are of much consequence, but often so small that they are required to be worked by hand, which is expensive. The best plan, which is practised here, is to fence two or three acres for that purpose away from the house. Then it can be prepared by double plowing, at a trifling cost, which will answer quite as well as spading. The gardens should be so adapted that all the small fruits, vegetables, etc., can be cultivated in long rows, with a horse. This makes the expense much less. A large amount can be grown in this way. It is often the case that the farmer's table is not as well supplied with fruit and vegetables as the inhabitants of our cities, who depend on the green grocer for their supply.

FARM LABOR.

The labor question is of great importance in agriculture. Besides the loss during the war, the tendency has been for the laboring class to crowd into the cities.

Day labor which, before the war, cost 75 cts. or $1 per day, now costs $1 to $2 per day; from $20 to $22 per month has generally been paid for good farm hands for 8 or 9 months, this season, which is the common way of hiring hands. I think it would be for the mutual interest of all parties for the farmer to hire most of his hands by the year. The American farmer seldom employs enough laborers to work his land to advantage; crops will be neglected and losses sustained in consequence. It would be far better to employ hands by the year. There is always work that can be done to advantage in the winter, such as underdraining, ditching, chopping, &c.

There are other important considerations to be looked after, besides the mighty dollar. It is the common practice among our German farmers (who keep no drones in the hive) for the girls occasionally to help secure the crops, even though they are rich.

It is sometimes the practice among our American farmers, who are not so rich, to bring up their girls in elegant leisure, with the idea that they will marry some rich gentleman; are so effeminate as scarcely to be of any use to themselves or any body else; are not taught to rely upon their own exertions at all.

County Ditches.—There has been constructed, or in process of construction, by the county commissioners, several large county ditches, in various portions of the county. These, when completed, will not only be a great benefit in an agricultural point of view, by carrying off the surface water, thereby preventing stagnation, and contributing much to the health of the inhabitants, whilst at the same time they afford an outlet for underdraining—a most important consideration.

FISH TRADE.

The fish business of this county has, within the last twenty years, become of much importance, in which a large capital is engaged, furnishing employment for a large number of men during the spring and fall months.

The amount of sales of packed and fresh fish is over ($800,000) eight hundred thousand dollars. Sales increasing every year.

It is singular that, previous to 1845, it was not known that white fish bred in our waters. What white fish were consumed here previous to that time were brought from Detroit, and were small and dear.

Great numbers of various species of fish had often been seen from the docks of Kelley's Island. Mr. Carpenter succeeded in accidentally hooking two specimens in 1845, which proved to be fine white fish. These are said to be the first white fish caught around the islands. White fish never bite at hook.

The next season, Spencer & Dibble put out the first pound that was ever in Lake Erie, near the shore of the west end of Kelley's Island, and imperfect as was this pound, they caught 62,000 white fish.

The fish are caught in the spring and fall, the largest number in the fall, in what the fishermen call pounds, which are put in the lake near the shore, at a depth of 30 to 40 feet of water, by driving down deep strong poles, nearly in the shape of, and called a heart, to which is fastened twine netting, inclosing it, except a small place for the fish to enter; the bottom is of twine netting also. From this heart there is what is called leading lines of netting, running out each side for 30 or more rods. The fish follow these lines into the pound, where they are safe, not hurt or frightened. They are taken out once a day if the weather permits, by raising up the twine bottom and scooping out with a small net the fish, all alive, in fine order, into a small boat. A first class pound, including boats, every thing ship-shape and right, will cost about $2,000.

Some white fish are caught in gill-nets, which is a small twine net; the fish are caught by the gills, when they strangle and die. These must be taken up in the morning, and set in a different place late in the afternoon. Fine, large fish are sometimes taken in great numbers from these nets. This kind of nets cost from $600 to $800.

Sometimes storms destroy thousands of dollars' worth of pounds and gill-nets. Often a large pound will take from one to two hundred dollars' worth of fish per day.

There are fifteen houses engaged in the fish trade. Sometimes, for many days in succession, over one hundred tons of fish are brought into Sandusky, as well as many tons taken into Huron and Vermillion.

It appears that the more pounds there are put out the greater the quantity of fish taken. The white fish and lake herring, which are the most valuable, are increasing in numbers; but the sturgeon, muscalonge, pickerel, black and white bass and pike are diminishing.

White fish which are the most valuable weigh from 4 to 6 lbs.; some single specimens weigh 12 to 14 lbs. They live in the deep water of the lake, only coming into the shallow water late in fall to spawn, when they are caught in large numbers; are always fat, a very nice, clean fish, never seen in muddy water.

The sturgeon was formerly considered worthless. One firm takes all that are caught, sending their skins to Philadelphia to be tanned, for ladies' and gentlemen's gloves. Their spawn, or roe, are put up in cans and sent to Germany; considered a great luxury in Hamburg. The flesh is salted and sent to New York

A large amount of white fish is, in the fall, put in an immense refrigerator, where they freeze and remain so, and are sent to distant markets in the winter, after the fish season is over; are equal to those fresh caught.

During the summer months, black and white bass, and several other kinds of fish, are taken in considerable numbers, with hook and line, around the islands and in the bay.

WEEDS.

I feel in duty bound to say a few words in regard to some of the worst weeds which are so rapidly spreading in our county, to the great damage of all crops.

Canada Thistle is the worst of all. There are a few small patches of it in our county; fifty dollars will now destroy them. If allowed to spread, in a few years they can never be eradicated.

Wild Mustard or *Charlock* is rapidly spreading from farm to farm, being sowed with oats or barley. There is considerable on the prairies. It is easily destroyed by cultivating the land in corn two or three years, not letting any go to seed. It requires to be carefully done. The seed will remain in the land twenty years and grow. This is the worst weed they have in England.

Pigeon Weed.—Pigion Weed, or Red Root, grows twelve to eighteen inches high, has a small dark, bluish leaf, small white blossom, small seed growing along the stock, of a black color when ripe. It comes up in fall and dies when the seed is ripe the next summer. It is the worst weed we have in the wheat field; when thick it will nearly choke out the wheat. The seed ripens a little before the wheat. I have seen large fields of wheat in Canada ruined by it. It is mostly confined to the fine wheat lands in Margaretta township. It is exceedingly to be regretted that it has got so strong a hold on many farms, doing great damage to the wheat crop. I find, by conversation, that a majority of the farmers of this county are not acquainted with it; hence I have been particular in describing it.

I have killed it in some of my fields by planting the land in corn two or three years, not letting any go to seed. Potatoes are best, as it sprouts in the fall. Digging them carefully will kill it. It is generally pulled up in the wheat fields during the month of May, before the seed is ripe, but it is a very difficult thing then to get it all out.

Yellow Dock.—Most of the farmers of this county have more or less of it. It is a very difficult weed to destroy. Much of the timothy seed sold has some dock seed in it. This is the fault of the farmers themselves, in cleaning up the seed from their barn floors, where there is more or less dock seed. Dock seed is a small buckwheat shaped seed, of a bright, shining, redish color, about the size of a timothy seed, and can be readily seen. The best time to kill dock is to pull it in a wet time in June, before the seed is ripe. If cut off in the spring it will grow again; any small piece of root left in the ground near the surface will grow. It will keep up until the seed is all out of the land. This seed has cost me over $200, and I am not done with it yet.

Burdock is a troublesome weed, but is easily destroyed by cutting when in bloom. This weed only lives two years, and is only grown by lazy people.

We have a few of the small, hard, sheep bur, which get on the sheep sometimes and greatly injure the wool. They require some attention; it is but little trouble to kill them; they live one year only.

We have a large class of weeds which grow among our cultivated crops. There is no excuse, with our improved implements, for letting them grow; for at the present time it is expected that all good farmers will have clean cultivation in their fields, and be especially careful not to let them go to seed. But this is often neglected. It pays to keep the weeds out of the land.

ICE.

The ice crop is of some importance, in fact, a necessity. Generally there is an abundant supply during the winter along our lake shore, and a large amount put up. Considerable ice is used in packing fresh fish. A large amount is sent south. Sandusky Bay seldom fails to furnish an inexhaustible supply of the best quality of ice. In 1868, 30,000 tons were stored in Sandusky; in 1869, over 40,000 tons, besides considerable put up in other places. Some houses in Sandusky put up 60 tons per hour. One house, in 1868, put up 7,000 tons for $1,000, or 14 2-7 cents per ton.

The ice is generally taken out 10 or 12 inches thick, cut by the ice-plow in blocks about 4 feet long and 2 feet wide. The plow is operated by a horse. When cut, the ice is floated to the ice house, hauled up an inclined plane with horse power and packed away on the edge in layers. The price depends on the supply.

MANUFACTURES.

There is considerable manufacturing in Sandusky; some large machine shops, at which various kinds of manufacturing are carried on.

There is a large supply of the best quality of timber along the bay shore, and near the railroad, which is largely used in making hubs, spokes, bent work, &c., for wagons, agricultural implements generally, and a variety of purposes. Much of this work is sent to foreign countries.

ERIE COUNTY AGRICULTURAL SOCIETY

Was organized in 1855, and held its first annual fair in October of that year in Sandusky, which was a success.

It was the next year removed to Huron for five years, and continued in a very prosperous condition during that time. Unfortunately, there was some difficulty in regard to location, and in consequence of that and the state of the country, no fairs were held for the four years preceding 1865.

The Society was reorganized in 1865, and a fair was held in the fall of that year at Sandusky. $2,700 was paid by Sandusky, Perkins and Margaretta for improving the ground. The county paid for the land, which is a beautiful grove of almost eleven acres, near Sandusky, costing about $5,000. Total cost of land and improvements, $12,755—$7,755 for improvements.

We have one fruit hall, with 500 feet of tables, and three other large halls; a half-mile track, a large dining house, a tenant house and many other improvements.

A table showing the Receipts and Disbursements for the last four years of the Erie County Agricultural Society.

Year ending—	Paid improvements.	Paid premiums.	Paid expenses.	Receipts.	Balance on hand.
November 21, 1865	$2,579 31	$59 50	$597 31	$3,493 69	$339 57
" 21, 1866	2,401 94	18 50	728 65	3,965 65	1,056 13
" 20, 1867	1,539 82	1,483 15	968 26	3,041 95	106 85
" 18, 1868	1,216 33	885 50	1,222 90	3,413 75	196 17
Total	$7,755 40	$2,446 65	$3,516 82	$13,915 04	....

In this hastily prepared and partial review of the history and agricultural status of Erie county, I have doubtless overlooked many important subjects of interest and historic fact that might justly have claimed my attention. What the future may develop from the wealth of soil and boundless resources we possess, time alone may answer.

The fathers of the county laid wide the foundations of society for a more perfect and complete state of civilization than we have yet reached. The men who opened up the forests, drained the swamps, and made the culture of the soil possible, are, one by one, rapidly passing away, committing to other hands their yet unfinished work. With all the results of their labor to build on, what may not be accomplished?

Let us hope the time may come when our farmers will be only satisfied with the best specimens of all the implements used on the farm to economize time and labor, the most profitable kinds of stock, with none but the best qualities of fruit, and in abundance, with practicing economy in collecting, preserving and composting fertilizers, and of adapting all with scientific skill to the nature of the soil cultivated; in brief, in making nature, art and science subservient to his interests, thus securing for himself that position to which he is entitled as the representative of God's nobility.

GRAIN CROP STATISTICS OF 1868.

The detailed abstracts of the agricultural returns, showing the acreage of lands under crops, bare fallow, and grass, in each county of Great Britain in 1868, have just been issued by the Board of Trade. Owing to certain alterations in the returns for 1867, among which may be mentioned that of the extension of the acreage returns to all occupiers in lieu of the prescribed limitation to occupiers of 5 acres and upwards, the results of that year could not be compared with any of the previous years, but the additional information collected in 1867 will render it a correct data of comparison with subsequent years.

The returns for 1868 were published in September, and they could be declared still earlier if the occupiers of land would make an effort to return the forms sooner to the collecting officers.

Taking into consideration those occupiers of land owning live stock, as well as occupiers of land only, the total number in Great Britain, in 1868, may be estimated at 520,971, viz: In England, 385,577; Wales, 55,283; Scotland, 80,111. For Ireland the number was about 600,000.

The leading characteristics of the returns for 1868 may be thus stated: Of the 59,964,260 statute acres of Great Britain, 29,955,695 were returned under crops, bare fallow, and grass, against 29,727,047 acres in 1867. The proportions per cent. in each of the two years 1867 and 1868 respectively, under the different heads, were: 31.2 and 31.5 under corn crops, 11.8 and 11.3 under green crops, 3.1 and 3.2 under bare fallow, 13.4 and 13.2 under clover and other grasses under rotation, and 40.3 and 40.5 permanent pasture, exclusive of heath mountain land. In England, of 32,596,397 acres, 23,038,781 acres were under cultivation, against 22,932,356 acres in 1867. The proportional numbers under each head in 1867 and 1868 respectively were: Corn crops, 32.3 and 32.5; green crops, 11.7 and 11.2; bare fallow, 3.3 and 3.5; clover, etc., 10.8 and 10.3; permanent pasture, 41.6 and 42.1. In Wales, of 4,734,486 acres, 2,503,646 acres were under cultivation, against 2,415,139 in 1867. The proportional numbers per cent. under each head in each of the two years were: Corn crops, 21.6 and 21.9; green crops, 5.7 and 5.1; bare fallow, 3.6 and 3.4; clover, etc., 12.5 and 13.1; permanent pasture, 56.6 and 56.5. In Scotland, of its 19,639,377 acres, 4,413,267 acres were under cultivation, against 4,379,552 acres in 1867. The proportions per cent. under the different heads, in each of the years 1867 and 1868, were: Corn crops, 31.1 and 31.4; green crops, 15.3 and 15.2; bare fallow, 1.9 and 1.7; clover, etc., 27.7 and 28.6; permanent pasture, 24.0 and 23.0. The results for Ireland are thus stated: Of the total area of 20,322,641 acres, 15,575,270 acres (including 206,446 acres under flax) were under cultivation in 1868; the proportional number of acres under each head closely followed that returned in 1867. The results for the United Kingdom, including the Channel Islands and the Isle of Man, are as follows: Of a total average of 77,513,585 acres, 45,652,545 acres were under cultivation in 1868, against 45,387,066 in 1867, showing an excess of 265,479 acres in the year under review. The proportional numbers under each head, in each of the years 1867 and 1868, were: Corn crops, 25.2 and 25.5; green crops, 10.9 and 10.6; bare fallow, 2.1 and 2.2; clover, etc., 12.5 and 12.5; permanent pasture, 48.6 and 48.6, or nearly one-half the total acreage returned.

Of 100 acres under corn crops in England, in each of the years 1867 and 1868 respectively, 42.4 and 45.3 acres were wheat, 25.6 and 23.7 were barley or bere, 20.4 and 19.9 were oats, .6 and .5 were rye, 6.7 and 6.7 were beans, and 4.2 and 3.9 were peas. In Wales, out of 100 acres under corn crops in 1867 and 1868 respectively, 47.4 and 46.9 were oats, 28.4 and 27.7 were barley or bere, and 22.4 and 23.8 were wheat. In Scotland, in each of the years 1867 and 1868, out of 100 acres under corn crops, 73.1 and 72.9 were oats, 16.0 and 15.8 were barley or bere, and 8.2 and 9.1 were wheat. In Ireland, out of 100 acres under corn crops in each of the years 1867 and 1868, 78.5 and 77.5 were oats, and 12.4 and 13.1 were wheat. The percentages of acreage are exclusive of hops in Great Britain and flax in Ireland.

The aggregate acreage under corn and green crops in the United Kingdom in 1868, as compared with 1867, shows the following results: In corn crops there has been an increase of 227,000 acres, and in green crops exclusive of potatoes, a decrease of 170,000 acres. The acreage under potatoes was larger in 1868 than in 1867 by 84,000, of which 58,000 acres were in Great Britain, and 34,000 in Ireland. In each division of the kingdom the acreage under wheat was larger in 1868 than in 1867. The total increase amounted to 310,000 acres. The acreage under barley shows a falling off in England of 112,000 acres; in Wales and Scotland, however, there was an increase of 4,000 acres, and in Ireland of 16,000 acres, so that the decrease in the entire kingdom amounted to only 92,000 acres. Under oats there was an increase in the United Kingdom of 48,000 acres; the chief part of the increase, 40,000 acres, was in Ireland, but Wales and Scotland also show an increase of 24,000 acres; England shows a decrease of 18,000 acres. Exclusive of potatoes, the acreage under green crops was generally lower in each division of the kingdom in 1868 than in 1867. The acreage under flax in Great Britain is distinguished for the first time in the present return. In 1868, there were under that crop 15,828 acres in England, 169 in Wales, and 1,546 in Scotland.

The counties of England in which the greatest proportion of corn crops to total acreage under cultivation was returned in each of the years 1867 and 1868 respectively, is shown by the following percentages: York (East Riding), 43.8 and 42.5; Lincoln, 42.1 and 42.7; Nottingham, 37.6 and 37.6; Rutland, 33.6 and 33.7; Huntingdon, 48.5 and 49.7; Warwick, 32.8 and 32.7; Northampton, 33.9 and 34.1; Cambridge, 56.3 and 55.4; Norfolk, 43.7 and 44.3; Suffolk, 49.8 and 50.6; Bedford, 46.0 and 47.0; Bucks, 34.4 and 35.0; Oxford, 40.2 and 40.4; Berks, 40.5 and 41.1; Hants, 39.4 and 39.3; Herts, 43.9 and 45.1; Essex, 50.5 and 51.7; Surrey, 35.8 and 35.8; Kent, 33.9 and 34.2; Sussex, 34.6 and 34.6. The number of acres devoted to the important crop of wheat in 1868 was: In Cambridge, 131,550; Devon, 125,495; Essex, 193,175; Hants, 117,852; Kent, 110,720; Lincoln, 307,518; Norfolk, 205,867; Suffolk, 160,167; Sussex, 104,847; Wilts, 103,522; York (East Riding), 123,268; York, (W. R.), 109,236.

The two groups which claim most attention are the grazing and the corn-growing counties. In the present returns these have been summarized. The total of acreage is not very different.

Thus, the acreage returned in 1868, in grazing counties and in corn counties respectively, was as follows: Under crops, bare fallow, and grass, 12,109,000 and 10,929,000: under wheat, 1,286,000, or 10 per cent. of total acreage, and 2,111,000, or 19 per cent. of total acreage; under permanent pasture, 6,363,000, or 52 per cent., and 3,341,000, or 30 per cent of total acreage.

A greater interest in the returns may be taken, if the yearly addition to the total number of consumers in Great Britain be considered. In round numbers about 240,000 are annually added to the population of England, Scotland and Wales. The wheat supply required for each one is about 6 bushels; this represents the produce of 50,000 acres, and of a much larger acreage at a lower rate of production.

Later returns than those published last year have been furnished of foreign countries. From these returns, the following results may be deduced: The number of mouths per English statute acre under crops was, in Norway, 3.66; Holland, 2.70; Belgium, 1.95; Wurtemberg, 1.32; Sweden, 1.36; Spain, 1.5; Bavaria, 1.4; Prussia, 1.6; France, .94; United States, .76; and Denmark Proper, .60. In Great Britain the proportional number was 2.63. The estimated average yield of wheat in imperial bushels per acre was, 19.83 in Sweden, 17.2 in Norway, 17.13 in Prussia, 20.62 in Holland, 21.35 in Belgium, and 13.89 in France.—*Country Gentleman's Magazine, London.*

Number of Horses, Cattle, Mules, Sheep and Hogs, returned in 1869.

COUNTIES.	Number of horses.	Number of cattle.	Number of mules.	Number of sheep.	Number of hogs.
Adams	7,297	14,332	587	24,084	19,580
Allen	7,568	15,581	307	47,486	20,413
Ashland	8,131	19,038	166	101,984	16,117
Ashtabula	9,034	32,323	122	57,598	3,908
Athens	6,241	16,387	135	70,682	11,733
Auglaize	6,553	12,868	454	29,845	18,274
Belmont	10,820	19,873	228	195,851	18,557
Brown	9,346	15,232	509	23,816	23,506
Butler	10,471	15,732	509	9,352	29,094
Carroll	4,626	11,742	84	151,643	7,779
Champaign	9,460	15,994	450	60,639	18,714
Clarke	8,841	15,572	536	71,908	18,714
Clermont	9,255	13,180	991	16,960	20,508
Clinton	9,243	15,734	591	53,161	35,674
Columbiana	8,837	17,500	236	164,473	11,554
Coshocton	7,940	18,601	132	167,455	16,522
Crawford	7,770	15,200	85	81,294	18,604
Cuyahoga	12,014	22,111	229	36,144	5,429
Darke	11,498	21,086	276	27,617	28,291
Defiance	5,464	11,117	67	29,569	11,690
Delaware	8,359	16,107	272	135,276	17,480
Erie	5,617	9,003	55	51,173	7,123
Fairfield	10,835	22,396	528	58,768	33,420
Fayette	7,485	17,934	818	51,150	38,001
Franklin	14,731	22,202	446	57,437	36,458
Fulton	5,716	13,077	89	43,715	9,909
Gallia	6,093	15,144	177	30,105	12,039
Geauga	5,153	24,741	106	27,691	2,312
Greene	10,101	15,917	561	42,004	27,657
Guernsey	7,397	15,174	239	181,070	9,931
Hamilton	21,290	21,413	1,027	5,426	21,175
Hancock	9,872	19,163	226	76,448	26,099
Hardin	5,895	11,322	424	52,167	15,101
Harrison	5,233	11,001	169	222,318	7,965
Henry	4,300	9,231	36	17,442	8,306
Highland	11,735	22,494	1,064	33,561	37,444
Hocking	5,292	12,237	224	45,068	10,942
Holmes	6,684	15,085	127	84,678	15,042
Huron	9,642	22,202	131	113,741	11,646
Jackson	4,973	15,840	428	27,788	10,224
Jefferson	6,040	12,491	98	182,342	8,717
Knox	9,171	18,645	244	177,061	17,170
Lake	4,211	9,861	46	26,977	1,822
Lawrence	4,237	14,103	337	13,012	13,072
Licking	11,903	23,668	340	283,007	21,456
Logan	8,685	16,721	405	67,377	17,298
Lorain	9,581	30,190	113	94,544	7,988
Lucas	5,169	8,109	93	16,070	5,440
Madison	6,809	18,803	668	116,864	20,766
Mahoning	7,341	18,244	234	91,084	6,612
Marion	7,123	14,193	149	110,956	17,778
Medina	7,717	21,892	54	102,333	6,571
Meigs	5,486	14,607	326	32,767	10,965
Mercer	6,890	10,855	150	29,076	18,466
Miami	9,841	14,688	285	20,630	21,155
Monroe	5,766	14,678	85	48,250	12,302
Montgomery	12,480	19,315	164	10,500	28,045
Morgan	6,835	16,876	148	95,228	13,310
Morrow	7,499	14,951	180	143,643	11,527
Muskingum	11,651	28,258	284	192,027	22,226
Noble	6,876	16,181	159	76,664	13,095

Number of Horses, Cattle, Mules, Sheep and Hogs returned in 1869.—Con.

COUNTIES.	Number of horses.	Number of cattle.	Number of mules.	Number of sheep.	Number of hogs.
Ottawa	3,258	5,986	15	19,753	5,952
Paulding	2,374	5,449	71	8,606	5.057
Perry	6,044	16,432	136	102,229	11,553
Pickaway	10,805	26,441	601	35.059	44,155
Pike	5,129	9,501	433	19,389	13,609
Portage	7,464	26,805	127	65,835	5,017
Preble	8,549	15,280	207	13,431	26,922
Putnam	5,732	12,719	115	26,470	13,525
Richland	9.392	19,234	173	94,874	19,929
Ross	11,504	24,891	663	34,168	44,157
Sandusky	8,358	15,464	100	49,209	15,896
Scioto	5,374	13,879	635	14,538	12,872
Seneca	9,732	18,437	119	113,600	19,450
Shelby	7,490	12,314	272	34,140	16,151
Stark	12,577	26,904	178	115,312	23,557
Summit	7,337	20,715	120	56,703	8,705
Trumbull	9.043	34,015	357	65,792	5,455
Tuscarawas	8,987	22,231	209	152,317	16,613
Union	7,639	13,503	491	94,834	15,767
Van Wert	4,937	10,102	120	22,982	12,927
Vinton	3,789	10.856	284	36,340	7,235
Warren	9,789	14,957	339	24,310	26,562
Washington	8,153	19,747	173	76,164	13,013
Wayne	11,317	26 349	259	99,432	22,646
Williams	7,071	13,550	81	48,377	14,052
Wood	8.019	16,618	125	42,335	14,172
Wyandot	6,592	11,987	214	97,442	12,278
Totals	704,578	1,492,581	25,020	6,272,640	1,455,943

Amount of Wheat, Rye and Buckwheat produced in the year 1868.

COUNTIES.	WHEAT.		RYE.		BUCKWHEAT.	
	No. of acres.	No. of bushels.	No. of acres.	No. of bushels.	No. of acres.	No. of bushels.
Adams	21,681	152,581	745	5,534	275	2,050
Allen	12,822	152,632	1,743	18,294	926	9,306
Ashland	19,657	270,123	1,204	15,030	680	8,464
Ashtabula	8,303	117,664	537½	7,564	447½	5,386
Athens	11,573	86,643	423	3,453	570	5,788
Auglaize	13,807	145,351	1,113	11,104	695	8,143
Belmont	17.575	200,802	1,111	9,894	509	5,567
Brown	22,829	159,306	1,769	13,267	303	2,291
Butler	37,733	329,144	375	2,693	254	3,160
Carroll	9,636	97,049	2,522	22.954	1,125	12,516
Champaign	31,245	363,047	313	4,766	235	2,596
Clark	26,915	332.526	1,225	12,118	157	1,734
Clermont	17,652	141,535	2,020	14,163	333	2,666
Clinton	21,749	255,667	749	7,180	388	3,632
Columbiana	16,165	168,050	2,398	19,531	1,556	14,926
Coshocton	15,985	155,766	2,482	20,202	1,345	12,987
Crawford	17,069	235,362	541¾	6,274	306¾	3,113
Cuyahoga	4,085¾	55,509	1,445½	21,056	90	1,051
Darke	37,038	396,668	1,077	12,306	704¾	7,860
Defiance	13,411	171,755	206	2.140	1,515	21,854
Delaware	12,252	139,028	510⅞	3,909	1,132	12,367½
Erie	9,814	136,371	241¾	3,340	377½	4,918
Fairfield	34,921	374.669	1,210¾	10,813	236¼	2.017
Fayette	9,296	97,128	2,934	30,643	230½	2,410
Franklin	22,054	232,606	1,239	10,802	649½	6,664
Fulton	12,642	195,385	283	3,631	1,511¼	20,363
Gallia	20,204	170,543	502	3,967	233	2,197
Geauga	2,923	38,252	347	4,067	198	1,799
Greene	30,789	407,767	821	9.733	133	1,574
Guernsey	11,181	95,831	1,780	12,672	758	6,328
Hamilton	10,356	94,149	1,513	16,898	362	4,562
Hancock	23,012	320,031	875⅞	1,452¾	759	11,091
Hardin	11,597	149,791	601	7,295	524	5.685
Harrison	8,494	91,832	1,370	12,928	439	4,545
Henry	8,058	115,293	263	3,732	849	12,888
Highland	33,339	259,180	1,388	11,573	66	630
Hocking	13,109½	107,523	1,313	10,107	647½	5,934
Holmes	17,463	208,776	1,697	17,770	1,073	12,300
Huron	17,963	247,372	255	2,474	387	3,451
Jackson	12,626½	85,620½	465½	3,188	217	1,902
Jefferson	11,495	141,592	810	7,281	194	1,722
Knox	16,647½	196,602	3,428	23,215	1,227½	13,251
Lake	3,587	47,763	110	1,147	136	2,057
Lawrence	10,832	97,738	256	2,114	178	1,691
Licking	18,035	201,744	2,600	20,624	1,108	12,228
Logan	24,092	343,532	474	3,681	495	4,776
Lorain	7,601	104,574	388¼	4,789	139¾	1,551
Lucas	5,862	98,965	166	2,067	1,047	18,590
Madison	3,763½	33,277	1,046¾	9,677	343½	3,679
Mahoning	7,707	101,830	818	8,166	441	4,532
Marion	11,140	147,104	188	1,963	255	2,534
Medina	7,987	116,505	867	11,252	319	2,920
Meigs	15,076	129,654	568	4,968	352	3,221
Mercer	16,965	190,494	1,169	12,383	829	9,765
Miami	37,593	425,485	488½	4,737	301¾	3,234
Monroe	11,965½	97,596	2,068½	15,469½	882½	9,503½
Montgomery	37,569	376,682	1,057	6,905	103	1,175
Morgan	13,168¾	114,358	377½	2,919	593	6,349

Amount of Wheat, Rye and Buckwheat produced in 1868—Continued.

COUNTIES.	WHEAT.		RYE.		BUCKWHEAT.	
	No. of acres.	No. of bushels.	No. of acres.	No. of bushels.	No. of acres.	No. of bushels.
Morrow	8,773	103,014	1,225	10,768	789	6,933
Muskingum	20,637	178,806	1,116½	8,153	503¼	4,546
Noble	13,312	113,654	814	6,773	506	4,802
Ottawa	3,820	50,566	63	950	247	2,797
Paulding	2,953	31,235	149	2,038	800	9,158
Perry	15,291	149,069	640	5,389	807	5,164
Pickaway	25,194	245,453	1,886	20,100	145	1,513
Pike	7,405	48,362	1,049	6,524	219	1,409
Portage	7,583	118,254	1,188	15,696	290	3,103
Preble	36,965	338,455	219	2,105	140	1,301
Putnam	10,606	110,388	1,145	12,065	1,055	13,630
Richland	25,001	320,306	1,654	16,748	974	9,305
Ross	26,101½	251,795	2,747¾	26,714	88¼	769
Sandusky	18,223	272,118	348	4,402	835	10,861
Scioto	9,055½	78,767	150½	1,271	275	1,987
Seneca	30,774	497,757	577¼	7,512	299	4,137
Shelby	17,469	185,288	336	3,170	606	5,754
Stark	35,089	599,026	877	10,221	441	4,594
Summit	14,472	251,194	1,049	14,292	258	3,377
Trumbull	4,440	62,442	1,222	14,336	605	6,535
Tuscarawas	21,290	275,057	1,984	19,133	1,105	10,583
Union	10,885	105,158	563	4,820	922	8,390
Van Wert	8,108	67,766	1,463	10,441	1,348	19,679
Vinton	5,913½	40,824	459	3,378	271¼	2,552
Warren	25,911	235,144	457¼	3,482½	412⅞	3,924
Washington	16,621	129,717	2,135	18,057	1,057	10,206
Wayne	31,773	485,614	975⅛	11,205	590⅞	5,310
Williams	18,056	251,210	252½	3,351	1,344½	18,694
Wood	9,044	137,252	353	4,423	1,767	24,209
Wyandot	15,857¾	226,546¼	330¼	4,273½	399¼	4,521¾
Totals	1,456,734½	16,480,059¾	87,899⅛	815,666¼	51,232½	562,256¾

Amount of Barley, Oats and Corn produced in the year 1868.

COUNTIES.	OATS.		BARLEY.		CORN.	
	No. acres.	No. bushels.	No. acres.	No. bushels.	No. acres.	No. bushels.
Adams	9,058	161,172	276	2,221	33,884	910,055
Allen	7,725	172,318	112	1,898	24,687	718,385
Ashland	14,623	398,020	537	10,489	19,813	671,541
Ashtabula	12,948	407,257	85	1,884	13,587	650,342
Athens	2,461	86,095	2	24	18,360	700,261
Auglaize	8,862	199.470	1,061	10,352	20,952	587,088
Belmont	14,116	353,987	2,011	35,582	25,065	874,881
Brown	10 991	173,458	297	5,027	36,947	1,095,148
Butler	10,407	237,479	6,692	83,646	53,039	2,164,062
Carroll	12,010	372,208	437	6,722	11,239	338,174
Champaign	7,642	194.526	161	2,438	33,878	1,325,166
Clarke	7,543	205.960	389	7,096	30,553	1,147,272
Clermont	15,281	299,451	318	3,772	34,905	1,089.238
Clinton	6,555	145,908	166	2,267	45,334	1,785,719
Columbiana	16,207	470,075	416	6 852	15,126	511.954
Coshocton	10,910	244.908	178	2,501	30,020	945,102
Crawford	14.413½	308,553	342½	6,797	23,784½	790,252
Cuyahoga	9.583½	300,406	72½	1,411	10,685½	360,544
Darke	15,241	296 788	1,500	24,959	39,417	1,464,813
Defiance	6,184	130,992	200	2,816	12,774	394,794
Delaware	5,123½	107,501	87	1,452	32,797½	1,336.495
Erie	7,161½	196,451	694½	11,940	15,956½	481.267
Fairfield	10,097	216,159	550	11,045	44,842½	1,897,743
Fayette	3,138	58,236	....	....	59,910	1,971,981
Franklin	8,949	194,322	657	13,378	64,862	2,447,565
Fulton	6,803	185,948	76	1,042	13,673	398,821
Gallia	7,311	130.387	4½	51	21,415½	613.488
Geauga	5,626	162,581	19½	511	5 653	176,104
Greene	5,895	142,300	498	9,998	44,670	1,716,333
Guernsey	9.558	186,359	131	1,844	18,696	550,728
Hamilton	10,567	249,623	2,614	42,547	28,902	1,160,567
Hancock	10,212	250,421	151	2,714	34,458	1,147,877
Hardin	5,018	107,344	12	194	19,445	643,967
Harrison	7,936	223,366	214	4,136	14,135	485,030
Henry	4.413	81,949	86	1,690	11,959	352,562
Highland	8,630	126,038	74	1,091	49.134	1,694,176
Hocking	5,094	99.117	37½	722	16,885	572.970
Holmes	13.474	382 100	732	11,848	21,680	593,020
Huron	15.593½	354,083	577½	10,758	27,259½	699.276
Jackson	6,216	103,751	½	10	18.739½	499.801
Jefferson	10,230	278,576	1,621	28,608	13.346	395,283
Knox	11,218	259,222	258½	4,900	30,398	1,017,573
Lake	3,518	112.916	325	6,089	4,956	330,349
Lawrence	5,084	88,655	13	375	18,103	487,231
Licking	10,529	237,405	161	1,680	43,324	1,783,740
Logan	6.005	143.817	56	891	27,657	963,694
Lorain	9,307½	285,481	740	14.287	14.918½	534,137
Lucas	4,364	114,417	122	2 473	9.384	423.626
Madison	3,010½	75,961	86½	1,237	36,797	1,352.965
Mahoning	10,378	302 977	160	3,116	11,259	453.221
Marion	7,670	169,270	186	747	29,023	1,026.241
Medina	10,966	334,400	200	3,665	13,106	481,938
Meigs	4,720	85.907	47	540	16.548	549,726
Mercer	8,346	197.901	394	5.113	21,457	619,365
Miami	11,049	316.992	1,204	20,660	37,063	1,413,831
Monroe	12,539½	197,353	51	860½	21,104½	545.745
Montgomery	12,383	328,485	1,736	25,819	35,786	1,574,125
Morgan	4,924½	98,337	22	279	16,951	635,608

Amount of Oats, Barley and Corn produced in 1868—Continued.

COUNTIES.	OATS.		BARLEY.		CORN.	
	No. acres.	No. bushels.	No. acres.	No. bushels.	No. acres.	No. bushels.
Morrow	8,527	191,424	81	1,295	19,385	642,916
Muskingum	9,812	98,813	95	1,575	29,651	1,041,524
Noble	7,135	129,973	51	1,412	20,416	686,629
Ottawa	2,483	61,747	82½	1,436	5,862	187,258
Paulding	1,352	23,158	4	48	5,291	137,977
Perry	4,902	101,660	106	2,000	18,160	642,435
Pickaway	4,073	93,460	226	3,506	70,292	2,678,903
Pike	6,179	100,974	76	1,414	25 364	686,231
Portage	8,612	248,222	863	18,928	9,492	358,488
Preble	9,823	245,521	817	10,132	35,572	1,311,629
Putnam	4,549	86,721	56	549	19,515	516,388
Richland	21,015	522,345	691	13,211	24,476	676,652
Ross	5,924¾	122,518	99	2,027	63,457	2,386,605
Sandusky	11,640	294,541	176	3,259	20,908	682,169
Scioto	6,631	105,429	82	2,041	29,856	623,623
Seneca	17,205	414,146	377	5,816	27,427	664,365
Shelby	9,439	203,253	581	6,627	18,021	487,010
Stark	19,458	568,575	6,657	125,229	20,540	802,610
Summit	14,145	352,600	2,561	53,566	12,577	603,288
Trumbull	9,746	281,089	27	499	12,190	617,662
Tuscarawas	18,330	501,763	706	11,553	21,864	676,250
Union	4.601	86,207	102	1,044	31,646	1,087,871
Van Wert	3,478	65,509	31	294	13,229	307,325
Vinton	2,730¼	49,642	....	....	11,584	340,522
Warren	11,492⅛	262,288	3,562	47,970	42,539¼	1,736,828
Washington	9,785	189,213	13	361	23,617	732,822
Wayne	22.723	703,073	1,424¼	26,673	26,486½	939,916
Williams	9,169	225,007	110½	1.526	17,815	496,038
Wood	9,409	246,635	213	3,213	26,613	852,995
Wyandot	6,583½	138,207	107	1,520	18,152	666,399
Totals	798,573⅛	19,058,852	40,021	815,788¼	2,232,301¼	76,725,288

Number of acres of Meadow, and Amount of Clover produced in 1868.

COUNTIES.	MEADOW.		CLOVER.			
	No. of acres.	Tons of hay.	No. of acres.	Tons of hay.	Bushels of seed.	Acres plowed under for manure.
Adams	9,319	8,450	2,886	932	522	434
Allen	12,887	15,289	3,396	3,275	140	284
Ashland	25,178	28,397	5,776	5,825	3,385	61
Ashtabula	49,689	69,718	839	1,254	3	106
Athens	15,878	19,314	418	469	81	72
Auglaize	8,567	9,751	1,899	1,872	121	322
Belmont	25,199	27,082	2,728	2,311	168½	41
Brown	11,597	10,607	4,099	1,009	40	1,101
Butler	7,556	8,564	8,044	1,027	25	2,155
Carroll	20,345	20,352	3,996	2,872	381	271
Champaign	12,448	14,567	3,454	2,494	520	712
Clarke	12,834	15,162	3,847	2,054	473	537
Clermont	16,905	16,919	1,978	563	42	665
Clinton	11,535	13,261	1,087	482	54	80
Columbiana	27,300	27,736	7,892	8,243	1,562	86
Coshocton	21,940	23,768	1,668	1,073	91	32
Crawford	20,687½	25,138	6,411	7,761	107¼	172
Cuyahoga	41,593½	49,112	368¾	531	3	70¾
Darke	8,850	10,073	10,213	5,326	884	2,976
Defiance	8,070	9,974	3,820	4,686	832	314
Delaware	24,868½	31,853	2,560	3,014½	293	254
Erie	12,494	17,382	2,144½	2,587	480½	392
Fairfield	15,226	17,472	5,377	4,637	1,575	340
Fayette	9,205	9,674½	738	160½	....	13
Franklin	19,765	23,374	3,198	1,379	119	1,679
Fulton	13,157	17,862	5,572	6,946	3,501	216
Gallia	10,034	10,517	1,475½	305	7	221
Geauga	36,864	37,502	107	150	....	9½
Greene	9,454	11,579	3,452	1,398	297	861
Guernsey	24,568	25,786	998	868	30	18
Hamilton	14,342	20,514	2,200	1,496	13	634
Hancock	16,845¼	22,838¼	5,761¾	6,962½	589	394
Hardin	12,515	14,937	1,355	1,643	59	71
Harrison	23,251	27,275	1,801	1,853	314	8
Henry	5,454	7,485	1,724	2,315	683	157
Highland	14,677	22,843	2,479	678	302	73
Hocking	9,841	9,303	1,242½	855	424½	107
Holmes	16,884	17,922	5,650	6.077	2,181	740
Huron	35,481	40,620	2,278	2,583	82	589
Jackson	12,089½	11,679½	1,092½	131	56	81
Jefferson	21,191	24,377	2,052	2,274	145	64
Knox	25,111¾	25,230	18,143½	4,037	1,531½	115
Lake	13,921	15.635	976	1,406	2	39
Lawrence	4,005	3,961	2,747	331	11	335
Licking	33,115	39,773	3,173	3,408	204	53
Logan	15,107	18,845	3,841	4,160	1,611	233
Lorain	40,249	48,054	532	747	14	2½
Lucas	10,313	14,177	1,589	2,257	900	244
Madison	15,188¼	17,088½	277	174	....	54
Mahoning	29,488	26,625	2,772	3,395	309	42
Marion	18.507	23,753	2,737	3,312	125	92
Medina	36.594	40,181	1,580	1,965	375	7
Meigs	13,668	16,644	791½	338	9	353
Mercer	8,516	9,768	3,650	3,905	691	312
Miami	6,214	6,912	6,189	3,888	1,348	1,610

Number of acres of Meadow, and Amount of Clover produced in 1868—Con.

COUNTIES.	MEADOW.		CLOVER.			
	No. of acres.	Tons of hay.	No. of acres.	Tons of hay.	Bushels of seed.	Acres plowed under for manure.
Monroe	13,178½	11,984¾	919	878	318	27¾
Montgomery	8,545	9,428	12,625	5,301	891	2,453
Morgan	15,446¼	16,569½	788¼	788	76½	38
Morrow	26,631	31,953	2,397	2,714	160	61
Muskingum	26,002	27,103	1,988	1,558¼	111	60
Noble	15,291	14,673	695	495	28½	98
Ottawa	6,420	12,559	862	1,211	197	122
Paulding	3,696	4,369	478	582	27	72
Perry	16,944	17,608	1,787	1,067	246	26
Pickaway	8,177	8,492	2,680	722	366	287
Pike	5,494	4,874	851	67	33	160
Portage	37,818	35,267	2,018	2,468	26	26
Preble	4,637	4,674	8,127	2,417	564	2,154
Putnam	10,098	12,045	1,921	2,184	137	222
Richland	24,236	27,848	11,492	6,840	2,135	222
Ross	8,472¾	9,016¼	3,873	516¼	184	233½
Sandusky	13,017	17,037	5,490	6,400	2,582	199
Scioto	7,659	8,329	1,268	360	14½	429
Seneca	24,933	27,224	7,903	8,574	412¾	190
Shelby	6,607	6,677	2,086	1,718	74	371
Stark	18,800	20,313	17,204	20,636	1,493	658
Summit	26,193	30,250	5,363	6,413	269¼	144
Trumbull	51,000	49,483	672	824	6	15
Tuscarawas	24,194	26.065	6,811	6,652	439	151
Union	17,223	23,139	1,203	1,560	83	159
Van Wert	7,737	9,270	2,486	3,090	183	265
Vinton	9,844	10,622	203	69	44½	2
Warren	10,508	12,258½	4,905	1,313	118¾	883
Washington	19,181	19.429	1,405	1,054	158	212
Wayne	28,365½	32,214½	13,089½	12,187	3,210¼	159
Williams	9,058	11,384	10,112	13,437	4,314	606
Wood	14,913	20,206	2,564	3,391	898	289
Wyandot	15,452¼	18,527½	1,450	1,704	120	165½
Totals	1,532,342½	1,743,537¾	942,391½	254,895¼	47,635¼	32,689½

Amount of Flax and Potatoes produced in the State in 1868.

COUNTIES.	FLAX.			POTATOES.	
	No. acres.	No. bushels seed.	No. pounds fibre.	No. acres.	No. bushels.
Adams	16	84	1,709	588	36.457
Allen	3.689	21,187	172	843	25,644
Ashland	1,769	13,540	4,226	1,013	78,328
Ashtabula	124¾	1,202	43,649	3,428	399,048
Athens	8	43	552	704	58,869
Auglaize	2,033	10,089	15,047	637	21,669
Belmont	2⅝	49½	110	1,215¾	94,770
Brown	4½	13	330	586	38,100
Butler	1,645	11,429	....	1,419	107,379
Carroll	214½	1,236	4,700	377	27,885
Champaign	726	4,078	160	408	37,023
Clark	1,561	10,237	66,483	619	50.325
Clermont	151	1,020	2	5,255	282,433
Clinton	3,397	19.778	1,204	557	42,778
Columbiana	934½	8,212	40,511	1,127	92,144
Coshocton	3	20	345	696	38,181
Crawford	360½	2,149½	240	1,001½	72,076
Cuyahoga	⅛	⅛	10	4.535⅞	298,479
Darke	7,336	39,160	1,570	719	47,924
Defiance	444	2,506	375	880	72,475
Delaware	3,831½	25,211	2,377,849	877½	67,338
Erie	....	....	....	2,015¾	142,549
Fairfield	44	473	434	1,225¾	83,969
Fayette	235	1,402	....	178⅛	14,923
Franklin	37	308	....	2,753	201,945
Fulton	54	432	....	1,017¾	83,543
Gallia	11½	34	927	1,011	74,325
Geauga	393⅞	6,117	307.274	1,563	133,048
Greene	7,401	48,530	1,702,800	537	39,220
Guernsey	16	134	990	365	22.264
Hamilton	4	22	....	5,961	347,770
Hancock	3,299¾	21,664½	137	933⅛	63,000
Hardin	1,328	6,849	....	428	30,590
Harrison	10	46	284	430	28,953
Henry	140	815	125	755	55,764
Highland	34	232	108	581	33,262
Hocking	111	785¾	3,224	575	39.017
Holmes	78	554	8,330	1,054	44.270
Huron	59½	451	61	2,168	94 781
Jackson	7⅛	34½	292	423½	29.470¼
Jefferson	2	42	15	749	51,078
Knox	613⅛	4,188	2,320	893⅝	85.782½
Lake	....	....	....	6,739	760,859
Lawrence	9	168	599	661	45.961
Licking	9	65	300	1,143	98,773
Logan	1,715	8,602	189,760	392	28,349
Lorain	29½	266	7,043	1,748¾	117,920
Lucas	67	460	19,200	1,937	142,294
Madison	608	3,371	....	279⅞	15,765¼
Mahoning	2,728	24,349	904,788	899	53 752
Marion	647	1,716	225,276	727	39,454
Medina	1,346½	12,784	205,880	957½	66,761
Meigs	4½	25½	861	1,919	128.931
Mercer	4,348	22,618	506	576	28.716
Miami	5,694	38,653	306,407	595¼	42,591
Monroe	19¾	131	1,010	1,041½	66.850
Montgomery	6,366	44,119	1,079,838	1,388	107,339

Amount of Flax and Potatoes produced in the State in 1868.—Continued.

COUNTIES.	FLAX.			POTATOES.	
	No. acres.	No. bushels seed.	No. pounds fibre.	No. acres.	No. bushels.
Morgan	3⅞	26¼	431½	534½	43,611
Morrow	2,148	12,002	312,900	633	46,134
Muskingum	2⅛	8¼	140	1,364½	84,511
Noble	2¾	34½	265	515	35,317
Ottawa	1	....	....	517	28,595
Paulding	153	703	120	248	15,750
Perry	83	592	1,793	600	14,683
Pickaway	1	9	30	535	41,995
Pike	17	72	1,430	464	28,607
Portage	1,882	15,496	1,203,780	2,524	190,003
Preble	4,481	31,390	851,700	465	35,752
Putnam	292	1,580	112	553	31,239
Richland	1,181	4,718	....	1,380	92,894
Ross	1½	7	241	772½	53,697
Sandusky	19½	119	150	1,843	138,729
Scioto	13⅝	66¾	956¼	874	51,372
Seneca	48⅝	591½	75	1,203¾	82,854
Shelby	3,234	14,016	1,488	388	15,393
Stark	887	7,720	262 275	1,410	77,320
Summit	13⅛	109	8,165	1,485	90,362
Trumbull	2,566	22,191	1,272,471	1,569½	110,955
Tuscarawas	341	1,717	527	872	38,614
Union	1,239	6.696	299,051	473	32,571
Van Wert	2,654	10,604	315	439	22,045
Vinton	18¼	105	1,200	339⅞	26,798
Warren	4,763	30,408⅛	2,192	1,515½	103,398½
Washington	10	40	902	2,276	178.900
Wayne	2,177⅛	18.631	169,372¼	1,354⅛	95,811
Williams	1,634	11.996	140	856½	65,215
Wood	1,051	6,744	111,173	1,279	95,756
Wyandot	184	1½	954	615	45,266
Totals	97,820¾	620,092⅝	12,032,392	103,287	7,449,247

Amount of Tobacco, Butter, Cheese, Stone-Coal and Pig-Iron in Ohio in 1868.

COUNTIES.	TOBACCO.		BUTTER.	CHEESE.	STONE-COAL	PIG-IRON.
	Acres planted	Pounds produced.	No. pounds.	No. pounds.	Bushels mined.	Tons manufactured.
Adams	228	154,527	368,811	912	....	....
Allen	3⅛	2,800	370,112	3,575	....	....
Ashland	1½	325	590,869	328,007	....	....
Ashtabula	1⅛	200	1,015,604	2,007,782	....	....
Athens	175	182,072	433,106	19,210	4,214,750	....
Auglaize	5½	1,172	240.573	760	....	....
Belmont	1,040¼	1,472,078	573,561	5,310	1,740,645	....
Brown	2,845	2,240,524	303,464	1,976	....	....
Butler	37	44,564	388,517	1,990	....	....
Carroll	1¼	115	441,375	....	131,120	....
Champaign	1⅛	171	361,959	38,032	....	....
Clarke	5⅝	4,060	300,849	2,786	....	....
Clermont	1,152	853,975	396,170	365	....	....
Clinton	160	885	314,598	9,096	....	....
Columbiana	1¼	408	577,972	49,834	5,390,971	19,206
Coshocton	1¾	626	519,818	22,595	668,950	....
Crawford	4	263	381,088	300	....	....
Cuyahoga	13-16	640	726,223	1,005,034	....	2,000
Darke	77	97,028	494,971	1,195	....	....
Defiance	22	24,260	324,870	5,242	....	....
Delaware	1½	625	498,221	5,934	....	....
Erie	9	200	254,783	3,160	....	....
Fairfield	40	34,538	514,842	700	....	....
Fayette	¾	724	216 399	740	....	....
Franklin	27½	210	357,156	4,700	....	....
Fulton	¼	200	418,782	83,035	....	....
Gallia	40¼	20,685	286,159	10,723	89,035	2,000
Geauga	1⅝	255	533,171	4,040.562	....	....
Greene	97	114,540	285,921	595	....	....
Guernsey	723	629,903	486,482	1,575	1,025,195	....
Hamilton	4	290	510,792	130	....	....
Hancock	1¾	520	563,604	6,950	....	....
Hardin	5	861	211,651	520	....	....
Harrison	65	48,321	466,838	1,023	365,948	....
Henry	1½	428	233,827	11,714	....	....
Highland	10	7,372	368,855	2,660	....	....
Hocking	277¾	208,532	293,837	2,638	1,706,920	4,100
Holmes	....	....	472,330	3,770	280,500	....
Huron	2½	100	728,176	81,641	50	....
Jackson	5	2,195	276,423	6,520	943,120	28,101
Jefferson	3	1,100	353,736	1,245	4,038,272	10,847
Knox	36⅞	29,054	568,035	6,081	24	....
Lake	3	4,500	271,573	433,035	....	....
Lawrence	88	62,232	142,464	1,000	2,224,163	29,450
Licking	7⅝	4,475	699,545	16,034	200	....
Logan	3⅝	1,906	409,634	4.830	....	....
Lorain	....	....	887,019	1,433.597	....	1,730
Lucas	....	290	226,304	1.910	....	....
Madison	¼	187	157,894	19,915	....	....
Mahoning	⅛	25	551,095	50,550	1,694,373	57,273
Marion	20	1,622	283,816	834	....	....
Medina	3	1,360	742,169	967,882	....	....
Meigs	9¼	2,675	424,779	30,703	8,829,740	....
Mercer	5¼	1,985	260,365	1,700	....	....

Amount of Tobacco, Butter, Cheese, Stone-Coal and Pig-Iron in Ohio in 1868—Continued.

COUNTIES.	TOBACCO.		BUTTER.	CHEESE.	STONE-COAL.	PIG-IRON.
	Acres planted.	Pounds produced.	No. pounds.	No. pounds.	Bushels mined.	Tons manufactured.
Miami	55	45,744	384,149	2,475	....	....
Monroe	2,861	2,384,047	363,767	251,260	63,420	....
Montgomery	2,675	2,915,917	388,245	70	....	....
Morgan	849	952,962	404,721	5,268	79,410	....
Morrow	1⅛	509	500,821	1,085	....	....
Muskingum	6¾	6,343	598,883	1,785	926,461	....
Noble	2,291	2,327,638	418,506	14,345	281,824	....
Ottawa	6½	272	126,261	520	....	....
Paulding	8	2,431	105,879	684	....	2,793
Perry	120	112,181	465,699	374	281,296	....
Pickaway	2⅝	480	294,180	1,086	....	....
Pike	28	13,760	141,526	922	....	....
Portage	19-20	145	712,181	2,158,458	26,000	....
Preble	126	152,495	388,659	613	....	....
Putnam	1⅝	609	270,668	2,344	....	....
Richland	2¼	1,160	580.339	8,194	....	....
Ross	4¾	1,715	283,565	8,133	....	....
Sandusky	9¼	865	325,274	1,634	....	....
Scioto	8¾	5,045	175,033	672	37,082	11,785
Seneca	2⅝	704	406,670	....	....	....
Shelby	46	24,684	182,329	....	....	....
Stark	48	775	687,267	18,298	6,929,949	2
Summit	⅝	60	605,533	1,865,070	1,456,013	....
Trumbull	¼	45	779,794	2,397,270	9,140,205	19,147
Tuscarawas	18	9,178	563,559	189,746	1,289,260	3,952
Union	3	1,320	400,282	52,960	....	....
Vanwert	7	3,781	205,329	....	....	....
Vinton	133¾	122,136	198,810	1,510	134,435	16,360
Warren	353⅞	387,635	428,866	1,066	....	....
Washington	1,315	1,625.515	495,271	22,530	93,485	....
Wayne	27	30,475	832,526	46,660	1,160,576	....
Williams	1½	1,025	504,312	3,780	....	....
Wood	3	999	461,450	6,150	....	....
Wyandot	1-36	845	244,734	7,000	....	....
Totals	18,035½	17.398,198	37,005,378	17,814,599	55,264,392	208,746

Amount of Sorgho and Maple Sugar produced in Ohio in 1868.

COUNTIES.	SORGHUM.			MAPLE SUGAR.	
	No. acres.	No. pounds sugar.	No. gallons syrup.	No. pounds.	No. gallons syrup.
Adams	661	....	54,913	6,825	2,570
Allen	335	463	22,766	15,582	2,224
Ashland	84	....	4,502	116,507	9,961
Ashtabula	5⅝	1,100	627	320,463	6,704
Athens	367	....	43,227	574	2
Auglaize	491	1,294	21,406	6,601	712
Belmont	581	1,138½	41,614	1 928	1,585
Brown	626	415	44,777	1,060	702
Butler	222	586	20,001	2,338	8,723
Carroll	159½	....	13,722	125	467
Champaign	158	230	15,414	44,707	5,533
Clarke	209	152	19,397	1,107	800
Clermont	879	2,227	67,799	457	1,168
Clinton	405	....	35,905	61,632	8,739
Columbiana	142	....	13,611	29,532	8,185
Coshocton	301	103	20,283	4,611	665
Crawford	164	116	11,682	10,715	2,383
Cuyahoga	30⅝	316	2,904	87,347	2,361
Darke	537	166	48,402	9,850	6,454
Defiance	293	....	30,605	7,442	624
Delaware	193¼	309	17,657	50,027	8,933
Erie	142½	....	14,492	14,025	408
Fairfield	359¾	240	6,381	13,839	4,124
Fayette	126	10	15,189	563	355
Franklin	416	3,405	37,333	5,696	1,391
Fulton	163½	15	17,150	2,821	399
Gallia	926¼	906	69,360	2,683	185
Geauga	2½	....	186	524,205	3,993
Greene	267	195	25,048	36,516	6,615
Guernsey	444	124	37,398	708	329
Hamilton	319	190	12,410	555	2 013
Hancock	220⅜	1,166	16,991	35.846	4,406½
Hardin	146	22	9,945	19,142	3,015
Harrison	254	....	17,455	1,147	1.558
Henry	221	5	18,484	2,872	713
Highland	435	1,776	9,675	9,685	2,594
Hocking	346⅞	....	33,664	3,240	1,011
Holmes	105	225	7,240	8,000	3,184
Huron	337	463	14,233	75,295	4,160
Jackson	462	....	45,425	165	92
Jefferson	147	....	11,001	1,911	1.871
Knox	138½	135	10,108¼	39,698	7,400
Lake	14	....	75	50,624	895
Lawrence	899	1,139	73,988	376	82
Licking	343⅝	432	25,823	36,898	9,714
Logan	120	....	11,552	250,765	10,007
Lorain	167	192	15,394	95,798	2,021
Lucas	73½	11	6,733	739	25
Madison	59¾	206	8,572	1,230	52
Mahoning	39½	119	3,388	105,332	14 279
Marion	175	896	6,317	10,071	894
Medina	30¾	150	2.027	246.641	9,789
Meigs	530¾	263	57,117	56,228	774
Mercer	487	....	31,086	2,947	386
Miami	309	....	3,017	15,275	8,124
Monroe	661¾	....	50,221	3,810	211

Amount of Sorgho and Maple Sugar produced in Ohio in 1868.

COUNTIES.	SORGHUM.			MAPLE SUGAR.	
	No. acres.	No. pounds sugar.	No. gallons syrup.	No. pounds.	No. gallons syrup.
Montgomery	355	584	42,527	34,720	9.927
Morgan	437	....	53.508	1.574	249
Morrow	110½	118	13,795	46,778	8,134
Muskingum	487⅛	251	43.283	697	891½
Noble	598	....	47,403	1,712	493½
Ottawa	118½	385	11,469	1,054	222
Paulding	131	98	9,598	2,767	333
Perry	306	13	29,059	23.323	8,157
Pickaway	191	510	17,552	6,962	2,306
Pike	407	....	32,260	6,848	1,333
Portage	12¼	32	758	323,992	17,836
Preble	339	1,803	33,707	18,608	7,654
Putnam	225¼	6	16,936	10.168	1,041
Richland	125½	487	7,152	56,212	11,442
Ross	315¾	125	31,428	8,560	5,077
Sandusky	254	....	21.902	4,774	669
Scioto	537¾	559	40,560½	550	263
Seneca	242⅝	208	16,949	19,025	2,463
Shelby	244½	102	13,412	2,067	1,284
Stark	86	327	5,526	27,953	5,684
Summit	40¾	....	2,869	64,512	3,015
Trumbull	22⅝	133	1,403	188,840	12,056
Tuscarawas	214	177	15,356	7,084	1,066
Union	164	....	11,247	121,377	5,499
Van Wert	382	....	19,153	4.260	249
Vinton	291	....	26,009	3,987	369
Warren	393¾	81	33,661	51,926	7,249
Washington	700	1,023	65,684	1,320	450
Wayne	83⅛	353	5.791	39 535	4,781
Williams	270	....	20,632	26,587	2 310
Wood	310	316	27,297	4,714	1,122
Wyandot	130¼	77	10,476	3,169	997
Total	25,257¾	28,668	2,004,055	3,570,932	311,191½

Amount of Grapes and Wine and Sweet Potatoes produced in the State in 1868.

COUNTIES.	GRAPES AND WINE.				SWEET POTATOES.	
	Acres planted in the year 1868.	Whole No. of acres in vineyard.	Pounds of grapes gathered in the year 1868.	Gallons of wine pressed in 1868.	No. acres.	No. bushels.
Adams	33	36	......	403	95	2,194
Allen	1	2¾	4,087	68	26	1,640
Ashland	24	59	5,425	....	10	423
Ashtabula	46⅓	192	198,810	2,899	1½	176
Athens	5	....	2,344	170	32	3,230
Auglaize	4¼	141	1,255	....	10	297
Belmont	53¾	438¾	203,485	12,387	27⅛	2,511
Brown	85	365	45	25,226	53	3,895
Butler	6	16	4,007	644	33	2,379
Carroll	....	2	4,270	343	¼	10
Champaign	5	5½	1,805	....	29	1,881
Clarke	6¾	¼	2,997	425	47⅞	4,924
Clermont	270	316	19,432	5,491	127	6,266
Clinton	2	3	1,090	11	32	2,500
Columbiana	22⅞	25½	12,614	2,850	8¾	879
Coshocton	16	21	1,390	657	6¼	433
Crawford	....	32	1,671	....	11¾	657
Cuyahoga	169	1,075¼	233,096	8,708	14	2,310
Darke	4	....	1,220	25	59¾	3,524
Defiance	....	....	4,319	351	2½	294
Delaware	15⅓	6¾	10,974	224	4	308
Erie	116	859⅓	842,409	14,736	4⅝	702
Fairfield	62⅓	230	26,878	5,868	66¾	4,925
Fayette	38	2½	1,341	....	37½	1,053
Franklin	49¼	13	25,287	1,539	30	1,253
Fulton	1	....	650	60	6	510
Gallia	58¾	72¾	3,095	435	11	1,276
Geauga	3⅝	11⅝	13,856	98	....	......
Greene	....	....	1,240	15	21	1,581
Guernsey	6	38	18,067	1,738	42	585
Hamilton	149	489	49,693	15,634	48	3,785
Hancock	½	2½	2,420	234	32½	1,299½
Hardin	....	....	470	2	2⅛	303
Harrison	20	21	5,322	473	7	148
Henry	....	3	690	120	7	334
Highland	7	6	......	115	58	3,194
Hocking	2¾	3	1,005	2	20¾	1,984
Holmes	6	26	9,315	2,690	12	700
Huron	6½	91	7,633	406	3	334
Jackson	⅝	⅞	1,383	5	5⅝	282
Jefferson	....	54	13,805	860	3	169
Knox	8	6½	3,094	14½	6⅛	804½
Lake	5	54	59,700	75	14	70
Lawrence	3	....	5,640	236	23	1,737
Licking	4½	38	13,569	480	9	917
Logan	18	18	7,186	111	17¾	1,143
Lorain	45	375⅓	224,750	2,990	8½	931
Lucas	14	17	10,900	5	3⅛	370
Madison	3½	....	300	....	1½	73
Mahoning	1½	6	7,625	60	5¼	217
Marion	28	....	2,919	192	10	203
Medina	....	4¾	10,807	118	1	11
Meigs	⅝	3	1,940	48	22	2,189
Mercer	....	6	3,413	306	15	788

Amount of Grapes and Wine and Sweet Potatoes produced in the State in 1868—Continued.

COUNTIES.	GRAPES AND WINE.				SWEET POTATOES.	
	Acres planted in the year 1868.	Whole No. of acres in vineyard.	Pounds of grapes gathered in the year 1868.	Gallons of wine pressed in 1868.	No. acres.	No. bushels.
Miami	¾	54½	2,102	10	34¾	2,181
Monroe	28	147¾	40,416	4,830½	12½	502
Montgomery	1	62	15,148	1,062	88	12,716
Morgan	3	6	12,865	761	60	5,452
Morrow	14½	19¾	1,500	540	5½	497
Muskingum	34¼	107⅙	30,571	3,347	64⅝	6,460
Noble	3¼	11¼	4,168	755	5½	366
Ottawa	66¼	1,352½	527,925	9,675	9¼	612
Paulding	....	....	200	10	3	167
Perry	17	34¾	43,120	1,133	21½	1,447
Pickaway	6½	28	7,760	886	38¾	2,132
Pike	10	13	1,935	319	10	584
Portage	13	15	7,740	....	¼	178
Preble	....	....	50	....	26	2,451
Putnam	....	¾	1,270	47	8½	513
Richland	2¼	10½	8,590	....	5½	450
Ross	44½	82¼	11,380	1,194½	20⅛	2,054
Sandusky	14⅞	22	915	....	8¼	1,297
Scioto	73½	76	2,700	1,066	32	2,530
Seneca	4	61⅛	1,295	280	8¾	794
Shelby	½	¾	970	20	8	231
Stark	10	5	11,144	130	8⅛	1,250
Summit	4⅛	28¾	38,885	689	1¾	103½
Trumbull	5¼	8¾	1,655	....	1⅙	250
Tuscarawas	16	123	54,592	4,394	12	643
Union	....	....	7,616	85	3	55
Van Wert	¼	¾	3,209	35	19	612
Vinton	32⅝	33	22,135	580	10⅝	1,000½
Warren	11¼	27¼	1,989	390	188½	13,133
Washington	14	22	11,980	767	107	9,619
Wayne	505⅝	17	5,321	88	7½	649
Williams	½	1¾	1,015	14	13¼	1,165
Wood	1	2	4,132	209	2	389
Wyandot	1¾	....	710	101	1½	184
Totals	2,357¾	7,574⅙	2,937,737½	143,767½	2,030½	148,268¾

Number of acres in Orchards and amount of Fruit produced in 1868.

COUNTIES.	ORCHARDS.			
	No. of acres.	APPLES.	PEACHES.	PEARS.
		No. of bushels.	No. of bushels.	No. of bushels.
Adams	3,902	19,300	6,369	782
Aileu	3,577	201,198	138	383
Ashland	4,189	289,428	945	3,048
Ashtabula	5,515	329,605	8,292	672
Athens	3,615	50,485	10,597	176
Anglaize	1,876	95.164	633	140
Belmont	5,413	224,351	6,410	1,649
Brown	3,726	8,118	3,640	202
Butler	3,922	6.508	16,973	1,617
Carroll	2,813	88,652	3,398	475
Champaign	3,423	113,247	12,368	1.911
Clarke	2,820	39.012	19,548	2,134
Clermont	8,278	18.949	38,357	3,734
Clinton	3,262	18,781	14,754	1,814
Columbiana	6,439	208,783	19,959	962
Coshocton	4,658	211,309	16,467	412
Crawford	3.941¾	308,724	32	377
Cuyahoga	5,524⅛	260,745	3,201	997
Darke	4,011	125.564	8,096	1,602
Defiance	2,391	38.506	106	49
Delaware	3,985½	145.740	4,657	602
Erie	3,029¼	174.494	1.947	335
Fairfield	5,049	131,794	13,326	1,064⅛
Fayette	1,938⅛	24,524	7,265	450
Franklin	4,288	75.011	9,697	754
Fulton	3,743	48,181	205	5
Gallia	4,162	13,007	507	49
Geauga	3.787	250.993	1,038	526
Greene	3.665	21.395	30,619	4,088
Guernsey	4,156	138,310	3,824	454
Hamilton	1,564	3,892	2,053	954
Hancock	4,810	276,679	....	165
Hardin	2,487	129,200	5	123
Harrison	3,832	134,258	4,880	502
Henry	1,926	30,659	1	84
Highland	4,246	19.336	13,952	1,163
Hocking	3,021⅛	57,302½	12,502	324
Holmes	4,030	235.290	3,700	1,034
Huron	6,021	331,205	775	634
Jackson	2,693¼	12,780	3,715⅛	24¼
Jefferson	3.919	131,654	6,068	1,265
Knox	4,539⅛	234.278	7,139⅛	308
Lake	1,821	178,563	6,888	326
Lawrence	3 584	18,147	1,410	64
Licking	5,975	214.652	11,618	828
Logan	3,053	155,116	4,035	1,544
Lorain	5,348	309,825	709	370
Lucas	2,795	44.864	306	25
Madison	1,743⅛	37,657	4,035	281
Mahoning	3,575	216,613	2,373	1,317
Marion	2.504	190,578	180	777
Medina	4.586	329,860	1,284	757
Meigs	5,052	19,554	2,739	173
Mercer	2,011	72,806	2,000	259

Number of acres in Orchards and amount of Fruit produced in 1868—Con.

COUNTIES.	ORCHARDS.			
	No. of acres.	APPLES.	PEACHES.	PEARS.
		No. of bushels.	No. of bushels.	No. of bushels.
Miami	3,808	93,511	11,433	1,769
Monroe	4,589¼	35,877	1,344	338
Montgomery	4,272	27,737	13,055	5,339
Morgan	4,050¾	70,404	9,844½	649½
Morrow	4,700	248,909	657	300
Muskingum	5,680¾	39,982	22,160	1,431½
Noble	3,775	119,269	4,700	1,090
Ottawa	1,385	22,270	18	95
Paulding	831	12,639	33	23
Perry	3,822	111,382	15,148	1,405
Pickaway	2,744	33,629	11,369	875
Pike	2,221	13,320	9,419	162
Portage	5,447	366,699	3,476	923
Preble	3,059	34,745	11,653	3,515
Putnam	2,137	84,146	3	46
Richland	6,219	323,622	1,729	454
Ross	4,332¼	29,901½	9,827	857
Sandusky	4,564	151,683	226	107
Scioto	2,432	11,885	4,839	40½
Seneca	5,309	302,481	10½	371½
Shelby	2,065½	68,701	1,952	481
Stark	5,804	471,306	2,791	1,538
Summit	4,711	342,920	2,267	1,011
Trumbull	5,227	288,546	1,388	524
Tuscarawas	6,112	225,256	8,994	395
Union	2,994	116,216	2,102	471
Van Wert	2,091	42,042	1,004	137
Vinton	1,938¾	20,416	7,684	110
Warren	6,424⅛	11,509¾	71,412	5,107½
Washington	7,499	97,909	10,753	414
Wayne	6,017	517,911	2,335	1,567
Williams	4,113	28,600	32	88
Wood	3,361	92,103	64	88
Wyandot	2,735¼	15,539½	41	225½
Totals	342,212	11,637,515¼	599,499	66,712½

Pasturage, Uncultivated Lands, Wool and Dogs, for the year 1868.

COUNTIES.	PASTURAGE.	UNCULTIVATED LAND.	WOOL.	DOGS. 1869.
	No. Acres.	No. Acres.	Pounds Shorn.	Total Number.
Adams	43,036	81,391	91,893	2,360
Allen	22,641	73,497	137,105	2,351
Ashland	47,742	58,936	396,613	2,400
Ashtabula	119,870	85,327	302,237	1,354
Athens	65,311	79,831	232,129	1,358
Auglaize	12,496	68,888	72,101	2,109
Belmont	76,610	77,766	695,268	3,207
Brown	39,703	57,695	76,100	2,418
Butler	19,835	37,747	41,221	2,259
Carroll	47,076	84,983	494,749	1,316
Champaign	37,269	55,092	218,423	1,804
Clarke	43,761	43,712	265,205	2,746
Clermont	34,162	57 096	53,547	2,113
Clinton	38,976	52,896	162,215	2,256
Columbiana	64,028	68,062	646,094	2,339
Coshocton	86,867	87,572	626,281	2,652
Crawford	36,935	56,813	359,107	2,058
Cuyahoga	77,457	42,600½	172,956	2,368
Darke	21,209	89,343	71,017	3,445
Defiance	9,472	51,313	83,716	1,120
Delaware	58,859½	71,350½	533,863	1,784
Erie	31,747	17,085	227,524	487
Fairfield	53,029	60,172	207,030	4,211
Fayette	59,805	172,173	172,334	1,853
Franklin	46,939	67,427	201,453	2,986
Fulton	14,026	74,224	164,133	1,154
Gallia	43,901	92,076	77,682	2,946
Geauga	94,312	49,573	130,684	966
Greene	35,829	43,680	138,234	2,188
Guernsey	92,548	89,424	617,467	1,940
Hamilton	2,384	5,493	12,896	5,744
Hancock	28,199	106,264	250,300	2,661
Hardin	22,496	80,302	146,493	1,713
Harrison	94,114	57,852	863,794	1,736
Henry	5,034	62,141	53,818	1,133
Highland	55,695	67,470	96,824	2,596
Hocking	44,732	80,058	137,058	2,457
Holmes	45,440	86,210	285,600	1,784
Huron	69,529	63,750	584,385	2,453
Jackson	46,239	64,233	83,395	1,868
Jefferson	71,831	60,209	655,000	1,515
Knox	79,829½	70,138	692,069	2,314
Lake	22,249	17,384	117,882	351
Lawrence	14,428	74,246	24,256	1,848
Licking	31,584	90,247	1,262,326	3,930
Logan	42,512	73,887	223,988	2,030
Lorain	85,507	60,584	420,515	1,345
Lucas	5 973	38,581	57,635	828
Madison	117,438	25,725	387,707	1,548
Mahoning	60,740	47,655	385,967	1,590
Marion	55,066	45,516	352,050	1,652
Medina	68.815	45,941	488,563	1,321
Meigs	38,932	81,440	103,485	2,922
Mercer	9,299	102,147	66,608	1,959
Miami	13,973	46,619	71,988	1,795

Pasturage, Uncultivated Lands, Wool and Dogs, for 1868—Continued.

COUNTIES.	PASTURAGE.	UNCULTIVATED LAND.	WOOL.	DOGS. 1869.
	No. Acres.	No. Acres.	Pounds Shorn.	Total Number.
Monroe	45,209¼	79,255	140,986	2,559
Montgomery	16,876	55,534	28,454	2,494
Morgan	56,166	56,416	304,377	2,077
Morrow	53,832	61,867	569,650	1,871
Muskingum	102,711	99,878	657,636	2,644
Noble	62,569	65,218	245,170	2,485
Ottawa	10,158	25,929	58,573	634
Paulding	2,573	39,242	21,021	791
Perry	76,356	63,631	386,991	2,357
Pickaway	67,201	43,031	113,950	4,887
Pike	28,589	61,949	45,745	1,980
Portage	92,601	67,289	329,650	1,456
Preble	23,644	64,584	46,004	1,841
Putnam	9,948	83,447	83,730	1,587
Richland	42,336	72,489	378,105	2,285
Ross	69,376¾	89,114½	107,916	2,794
Sandusky	21,505	64,812	155,182	1,623
Scioto	17,164	73,371	27,217	1,956
Seneca	35,286	85,344	428,873	1,871
Shelby	10,937	38,013	85,506	1,287
Stark	49,931	57,863	425,737	2,918
Summit	59,461	43,700	251,195	1,473
Trumbull	19,602	70,817	313,249	1,737
Tuscarawas	83,212	78,912	544,655	2,876
Union	51,576	57,336	362,060	1,959
Van Wert	7,197	92,791	61,935	1,574
Vinton	41,217	91,622	121,712	1,435
Warren	28,332	47,638	76,112	2,297
Washington	59,421	113,630	253,404	3,127
Wayne	48,484½	83,109	385,224	2,642
Williams	17,777	88,446	181,745	1,977
Wood	15,631	93,104	133,545	1,916
Wyandot	28,737½	50,049	232,137	1,144
Total	3,963,097	5,861,277	22,940,479	184,102

Sheep killed and injured by Dogs, etc., in 1868.

COUNTIES.	SHEEP KILLED.		SHEEP INJURED.		Aggregate am'unt of injury to Sheep by Dogs.	Bonds, etc., exempt from taxation.
	No.	Value.	No.	Estimate of injury done.		
Adams	415	$748 50	193	$244 00	$992 50	$216,478
Allen	367	760 00	153	345 00	1,105 00	12,804
Ashland	304	748 00	189	524 00	1,272 00	218,500
Ashtabula	284	690 00	191	248 60	938 60	558,050
Athens	470	928 00	163	193 00	1,121 00	82,350
Auglaize	188	277 00	35	27 00	304 00	44,180
Belmont	1,219	2,940 00	547	875 00	3,815 00	450,590
Brown	557	1,101 00	77	110 00	1,211 00	134,502
Butler	466	1,541 00	116	304 00	1,845 00	211,547
Carroll	193	479 00	.....	124 00	603 00	31,700
Champaign	587	1,332 00	340	456 00	1,788 00	91,779
Clarke	766	1,893 00	646	625 00	2,518 00	429,544
Clermont	685	2,083 00	256	368 00	2,451 00	87,659
Clinton	706	1,293 00	401	439 00	1,732 00	140,575
Columbiana	603	1,601 00	297	640 00	2,241 00	171,257
Coshocton	703	1,670 00	318	472 00	2,142 00	105,908
Crawford	565	1,101 00	339	506 00	1,607 00	108,214
Cuyahoga	358	975 00	193	363 50	1,338 50	207,100
Darke	736	1,540 50	198	379 00	1,883 50	65,611
Defiance	170	289 00	34	44 00	333 00	8,347
Delaware	596	1,263 00	391	612 00	1,875 00	295,636
Erie	933	1,404 00	238	116 00	1,520 00	107,825
Fairfield	895	2,205 00	671	910 00	3,115 00	101,229
Fayette	596	1,478 50	349	509 00	1,987 50	11,662
Franklin	1,299	2,298 00	630	1,702 00	4,000 00	504,152
Fulton	136	213 00	44	40 00	253 00	2,039
Gallia	787	1,124 00	104	126 00	1,250 00	66,551
Geauga	180	399 00	88	152 00	551 00	210,835
Greene	720	1,850 00	224	545 00	2,395 00	230,806
Guernsey	503	943 50	467	552 00	1,495 50	110,430
Hamilton	304	994 00	86	130 00	1,124 00	2,457,815
Hancock	694	1,696 00	313	316 00	2,012 00	51,057
Hardin	330	598 50	214	236 00	834 50	2,284
Harrison	305	776 00	348	522 00	1,298 00	136,350
Henry	350	945 00	47	88 00	1,033 00	5,110
Highland	561	1,399 00	396	298 00	1,697 00	213,976
Hocking	647	1,249 50	218	316 00	1,565 50	39,613
Holmes	60	107 00	48	48 00	155 00	56,650
Huron	616	1,549 00	288	360 00	1,909 00	257,659
Jackson	490	1,083 00	138	126 00	1,209 00	130,379
Jefferson	579	1,506 00	352	802 00	2,308 00	207,941
Knox	437	857 00	458	696 50	1,553 50	152,738
Lake	65	135 00	45	31 00	166 00	352,410
Lawrence	531	901 00	62	73 00	974 00	99,782
Licking	913	1,899 00	1,042	1,277 00	3,176 00	445,768
Logan	367	891 50	344	385 50	1,277 00	33,802
Lorain	286	564 50	348	300 00	864 50	62,450
Lucas	141	271 11	44	38 00	309 11	56,586
Madison	601	1,416 50	145	312 00	1,728 50	37,647
Mahoning	428	1,120 00	486	789 00	1,909 00	260,190
Marion	647	1,081 00	501	567 00	1,648 00	11,875
Medina	352	1,267 00	289	393 00	1,660 00	48,123
Meigs	465	840 00	139	97 00	937 00	120,161
Mercer	460	718 00	86	96 00	812 00	18,152
Miami	619	1,260 00	322	421 00	1,681 00	63,750

Sheep killed and injured by Dogs, etc., in 1868—Continued.

COUNTIES.	SHEEP KILLED.		SHEEP INJURED.		Aggregate am'unt of injury to Sheep by Dogs.	Bonds, etc., exempt from taxation.
	No.	Value.	No.	Estimate of injury done.		
Monroe	679	$1,248 75	139	$234 00	$1,482 75	$92,898
Montgomery	384	1,033 00	78	242 50	1,275 50	165,629
Morgan	421	848 50	410	578 50	1,427 00	103,834
Morrow	453	883 00	430	656 00	1,539 00	54,086
Muskingum	936	2,005 00	738	829 00	2,834 00	375,302
Noble	383	694 00	196	328 00	1,022 00	101,213
Ottawa	278	496 00	137	167 50	663 50	16,390
Paulding	321	601 00	41	60 00	661 00	10,011
Perry	545	1,176 00	245	410 00	1,586 00	83,264
Pickaway	737	1,540 00	310	406 00	1,946 00	179,300
Pike	654	1,147 00	112	101 00	1,248 00	41,234
Portage	470	945 00	256	257 00	1,202 00	360,757
Preble	246	585 00	53	77 00	662 00	67,391
Putnam	437	821 00	90	94 00	915 00	22,858
Richland	442	827 00	183	256 00	1,083 00	353,092
Ross	1,163	1,966 00	451	535 00	2,501 00	118,009
Sandusky	362	621 00	231	508 50	1,129 50	74,000
Scioto	593	1,363 50	74	141 00	1,504 50	95,868
Seneca	475	735 50	270	255 50	991 00	199,438
Shelby	255	387 00	91	152 00	539 00	10,348
Stark	732	1,276 00	673	633 50	1,909 50	161,200
Summit	597	1,434 50	332	463 50	1,898 00	139,651
Trumbull	567	1,391 50	223	522 50	1,914 00	549,569
Tuscarawas	762	1,461 50	422	480 00	1,941 50	87,232
Union	327	762 00	317	367 50	1,129 50	12,890
Van Wert	551	929 00	57	72 00	1,001 00	12,833
Vinton	449	713 00	88	98 50	811 50	18,054
Warren	820	2,844 75	323	647 50	3,492 25	369,335
Washington	794	1,367 25	319	472 00	1,839 25	76,641
Wayne	738	1,877 00	619	837 50	2,714 50	215,172
Williams	288	477 00	111	134 50	611 50	61,856
Wood	520	789 50	108	138 50	928 50	34,151
Wyandot	299	664 50	79	121 00	785 00	23,617
Total	48,203	$98,167 36	22,725	$32,546 10	$130,713 46	$14,627,301

LAWS OF OHIO

FOR THE

ENCOURAGEMENT OF AGRICULTURE.

AN ACT For the encouragement of agriculture.

SECTION 1. *Be it enacted by the General Assembly of the State of Ohio,* That whenever thirty or more persons, residents of any county or district embracing two counties of this State, shall organize themselves into a society for the improvement of agriculture within said county or district, and shall have adopted a constitution and by-laws, agreeably to the rules and regulations to be furnished by the Ohio State Board of Agriculture, hereinafter created, and shall have appointed the usual and proper officers; and when the said society shall have raised and paid to their treasurer, by voluntary subscription, or by fees imposed upon its members, any sum of money in each year, not less than fifty dollars; and whenever the president of said society shall certify to the respective county auditors, the amount thus paid, attested by the oath of the treasurer before a magistrate, it shall be the duty of the said county auditor, embraced within the district in which such society shall be organized, to draw an order on the treasurer of the respective county, in favor of the president and treasurer of said society, for a sum equal to the amount thus raised; provided it does not exceed half a cent to each inhabitant to the said county, upon the basis of the last previous national census, but not to exceed in any county the sum of two hundred dollars, and it shall be the duty of the treasurer of the said county to pay the same.

SEC. 2. That it shall be the duty of the several county or district societies which may be formed under the provisions of the preceding section, during the continuance of this act, annually to offer and award premiums for the improvement of soils, tillage, crops, manures, implements, stock, articles of domestic industry, and such other articles, productions and improvements, as they may deem proper, and may perform all such acts as they may deem best calculated to promote the agricultural and the household manufacturing interests of the district and of the State; and it shall also be their duty, so to regulate the amount of premiums and the different grades of the same, as that it shall be competent for small as well as large farmers to have an opportunity to compete therefor; and in making their awards, special reference shall be had to the profits which may accrue, or be likely to accrue, from the improved mode of raising the crop, or of improving the soil or stock, or of the fabrication of the article thus offered, with the intention that the premium shall be given for the most economical mode of improvement; and that all persons offering to compete for premiums, on improved modes of tillage, or the production of any crops, or other articles, shall be required, before such premiums are adjusted, to deliver to the awarding committee a full and correct statement of the process of such mode of tillage or production, and the expense and value of the same, with a view of showing accurately the profits derived or expected to be derived therefrom.

Sec. 3. It shall be the duty of each county or district society to publish annually a list of the awards, and an abstract of the treasurer's account, in a newspaper of the district; and to make a report of their proceedings during the year, and a synopsis of the awards for improvements in agriculture and household manufactures, together with an abstract of the several descriptions of those improvements, and also make a report of the condition of agriculture in their county or district, which reports shall be made out in accordance with the rules and regulations of the Ohio State Board of Agriculture, and shall be forwarded to the State Board at their annual meeting in December, in each year; and no subsequent payment shall be made from the county treasury, unless a certificate is presented to the auditor from the president of the State Board, showing that such reports have been duly made.

Sec. 4 Enumerates the incorporators.

Sec. 5. It shall be the duty of said Board, or any ten of them, to meet in the city of Columbus, on the first Wednesday of April, after the passage of this act, and to organize by appointing a president, secretary and treasurer, and such other officers as they may deem necessary; also, determine by lot the time that each member shall serve, so that the term of service of one-half of the members shall expire annually, on the day of the annual meeting in December; and the president shall have power to call meetings of the Board whenever he may deem it expedient.

Sec. 6. There shall be held in the city of Columbus, on the first Wednesday after the first Monday in December, an annual meeting of the Ohio State Board of Agriculture, together with the president of each County Agricultural Society, or other delegates therefrom, duly authorized, who shall, for the time being, be ex officio members of the State Board of Agriculture, for the purpose of deliberation and consultation as to the wants, prospects and condition of the agricultural interest throughout the State; and at such annual meeting, the several reports from the county societies shall be delivered to the president of the Ohio State Board of Agriculture; and the said president and delegates shall, at this meeting, elect suitable persons to fill all vacancies in the Ohio State Board of Agriculture.

Sec. 7. And it shall be the duty of said Board to make an annual report to the General Assembly of this State, embracing the proceedings of the Board for the past year, and an abstract of the proceedings of the several agricultural societies, as well as a general view of the condition of agriculture throughout the State, accompanied by such recommendations as they may deem interesting and useful.

Sec. 8. That the act to authorize and encourage the establishment of agricultural societies in this State, and for other purposes therein set forth, passed March twelfth, one thousand eight hundred and thirty-nine, be and the same is hereby repealed; provided the acts done, obligations incurred, and rights acquired under the provisions thereof, shall remain in nowise altered or affected by this act.

AN ACT To amend an act entitled "an act for the encouragement of agriculture," passed February 27, 1846.

Section 1. *Be it enacted by the General Assembly of the State of Ohio,* That the "Ohio State Board of Agriculture" shall consist of ten members, five of whom shall constitute a quorum.

Sec. 2. That Allen Trimble, M. L. Sullivant, Samuel Medary, Darius Lapham, A. E. Strickle, Arthur Watts, M. B Bateham, John Codding, Jared P. Kirtland and I. Moore, be continued members of the Board, the term of service and the mode of appointing their successors to remain unaltered by this act.

SEC. 3. That the sum of two hundred dollars be and the same is hereby appropriated from the treasury for the use of the Board; and an account of the expenditures of the Board shall be included in the annual report of the Board to the General Assembly.

SEC. 4. So much of the law to which this is an amendment, as conflicts with the provisions of this act, is hereby repealed.

AN ACT To protect agricultural fairs and fair grounds.

SECTION 1. *Be it enacted by the General Assembly of the State of Ohio,* That it shall be lawful for any justice of the peace, on the application of any of the officers of any State, county, township, or any independent agricultural societies, or industrial associations, to appoint a suitable number of special constables, to assist in keeping the peace during the time when such society shall be holding their annual fairs, and make an entry in his docket of the number and names of all such he may appoint.

SEC. 2. All such constables so appointed shall have all the power of constables to suppress riots, disturbances and breaches of the peace; they may, upon view, arrest any person or persons who may be guilty of violating any of the laws of the State, may pursue and arrest any person fleeing from justice in any part of the State; to apprehend any and all persons in the act of committing any offense against the laws thereof, and may, upon reasonable information, supported by affidavit, procure process for the arrest of any person or persons who may be charged with a breach of the peace and forthwith bring such person or persons before the competent authority, and enforce all the laws for the preservation of good order.

SEC. 3. No person shall be allowed to keep any shop, booth, tent, wagon, or other carriage, vessel or boat, or any stand or table for the sale of any spirituous or other liquors, or sell or expose to sale, give, barter or otherwise dispose of, in or near such shop, booth, tent, wagon, or other carriage, vessel, boat, stand or table, or in any other way or place, any spirituous or other liquors, at or within the distance of two miles from the place where any such agricultural fairs are held.

SEC. 4. That any person or persons who shall be guilty of a breach of this act, and shall be notified by any one of the officers authorized to make an arrest or seizure, or by any other person, that he, she or they are violating the law; and if, after such notice, such person shall continue in such violation, he, she or they shall forfeit and pay for such offense, a fine of not less than five nor more than fifty dollars, to be paid over to the treasurer of such agricultural society where the offense was committed; and any judge of the court, sheriff, coroner, justice of the peace of the proper county, or any constable of the proper township, or the constables specially appointed, shall, upon view or information, without warrant, apprehend any person so offending, and seize such booth, tent or wagon, or other carriage, stand, vessel or boat, selling sprituous or other liquors, and convey the same to a place of safe keeping, and take the person so offending before some officer having competent jurisdiction, together with an inventory of the things so seized, and the officer before whom such alleged offender shall be brought, shall proceed forthwith to inquire into the truth of the accusation, and if true, shall enforce the penalties of this act.

SEC. 5. If the accused shall fail to pay such fines as shall be assessed, together with all the costs of proceedings, including the necessary expenses of such seizure, the said officer before whom such offender was tried, shall forthwith issue a venditioni exponas, commanding any constable of the township in which such inquiry shall be held, to make the fine and costs, necessary expenses, and costs of execution, by sale of so much of the property as shall be necessary therefor, and make return thereof within ten days thereafter.

SEC. 6. That in the execution of the venditioni exponas, the said constable, at least ten days before the sale, shall advertise the property to be sold at two of the most public places of the township, where the same is to be sold, at one of which places, to be designated in the notice, between the hours of ten o'clock A. M. and four o'clock P. M., said sale shall be held; said constable first selling or offering for sale the articles which the offender brought on to the ground for traffic, and the overplus of the property so seized as aforesaid, after the satisfaction of said venditioni exponas, shall be delivered to the defendant, on demand; but if he shall fail to demand the same for ten days after such sale, the same shall become forfeited to the said agricultural society, and if the property so seized shall be found insufficient to satisfy said venditioni exponas and costs of execution, said justice of the peace shall, at any time thereafter, on request of the treasurer of said society, issue a fieri facias to collect the balance thereof.

Passed April 11, 1856.

AN ACT to amend section three and section six of an act for the encouragement of agriculture, passed February 28, 1846.

SECTION 1. *Be it enacted by the General Assembly of the State of Ohio,* That section three of the above recited act be amended so as to read as follows: It shall be the duty of each county or district society to publish annually a list of awards, and an abstract of the treasurer's account, in a newspaper of the district; and to make a report of their proceedings during the year, and a synopsis of the awards for improvements in agriculture and household manufactures, together with an abstract of the several descriptions of these improvements, and also make a report of the condition of agriculture in their county or district; which reports shall be made out in accordance with the rules and regulations of the Ohio State Board of Agriculture, and shall be forwarded to the State Board at their annual meeting in January in each year; and no subsequent payment shall be made from the county treasury unless a certificate be presented to the auditor, from the president of the State Board, showing that such reports have been made.

SEC. 2. That section six be amended so as to read as follows: There shall be held in the city of Columbus, on the first Wednesday after the first Monday in January, an annual meeting of the Ohio State Board of Agriculture, together with the President of each County Agricultural Society, or their delegate therefrom duly authorized, who shall for the time being be ex-officio members of the State Board of Agriculture, for the purpose of deliberation and consultation, as to the wants, prospects, and condition of the agricultural interests throughout the State; and at such annual meeting the several reports from the county societies shall be delivered to the President of the Ohio State Board of Agriculture, and the said president and delegates shall at this meeting elect suitable persons to fill all vacancies in the Ohio State Board of Agriculture.

SEC. 3. That sections three and six be and the same are hereby repealed.

SEC. 4. This act shall take effect and be in force from and after its passage.

Passed February 20, 1861.

AN ACT to protect agricultural fairs.

SECTION 1. *Be it enacted by the General Assembly of the State of Ohio,* That it shall be unlawful for any person to exhibit or show any natural or artificial curiosity for any price or gain, or shall set up to let or use for profit any swing, revolving swing, flying horses, or whirligigs, within one-fourth of a mile of the fair ground of any agricultural society in this State, while the fair of such society is being held therein, unless such person shall first have obtained the written permission of the Board of such agricultural society to make such exhibition.

SEC. 2. That if any person shall violate the provisions of this act, he shall, on conviction thereof, be fined in any sum not less than one nor more than one hundred dollars; and all moneys derived from the violation of this act shall be appropriated to the support of common schools.

SEC. 3. This act shall take effect from and after its passage.

Passed April 6, 1861.

AN ACT to provide for the creation and regulation of township agricultural societies.

SECTION 1. *Be it enacted by the General Assembly of the State of Ohio,* That when any number of natural persons of any township in the State of Ohio shall form an association for the promotion of agriculture in such township, and shall, under their hands and seals, make a certificate, and acknowledge the same before a justice of the peace, in which shall be specified the name of the society, the objects of its formation, and the township in which it shall be located, and shall record the same in the recorder's office of the proper county, such society shall be deemed a body corporate, with succession, and with power to sue and be sued, plead and be impleaded, defend and be defended, contract and be contracted with; to make and use a common seal, and the same to alter at pleasure; and shall have power to purchase and hold, in fee simple, or to rent or lease such real estate as may be required as a site for holding fairs, not exceeding twenty acres, and to establish all necessary rules and regulations for the management of such fairs, and the legitimate business of the society.

SEC. 2. This act shall take effect on and after its passage.

Passed May 1, 1861.

AN ACT requiring the return of statistics.

SECTION 1. *Be it enacted by the General Assembly of the State of Ohio,* That the several township, ward or precinct assessors shall annually, at the time of taking the lists of personal property for taxation, take from each person and company in his township, ward or precinct, a statement of the number of acres he or they may have had the preceding year in wheat, rye, barley, corn, oats and buckwheat, and the number of bushels of each produced the preceding year. The number of acres in timothy, grass, and the number of tons of hay produced therefrom the preceding year; the number of acres grown in clover, the number of tons of hay made from it, the number of bushels of seed obtained, and the number of acres of clover plowed under for manure; the number of acres planted in tobacco, and the number of pounds obtained; the number of tons of pig-iron manufactured, and bushels of stone-coal dug; the number of acres sown in flax, number of pounds of fiber gathered, and the number of bushels of seed obtained; the number of acres planted in sorgo, the number of gallons of syrup manufactured, and the number of pounds of sugar obtained; the number of pounds of maple sugar made, and the number of gallons of syrup manufactured; the number of pounds each of butter and cheese manufactured; the number of acres planted in potatoes, and the number of bushels obtained; the number of acres planted in sweet potatoes, and the number of bushels obtained; the whole number of acres planted in vineyards; the number planted within the last year; the number of pounds of grapes gathered the last year; the number of gallons of wine pressed the last year; the number of pounds of wool shorn the previous year; the number of acres occupied as orchards, and the number of bushels of apples, peaches and pears produced the previous year; the number of acres used for pasturage the previous year, and the number of acres owned, but uncultivated within the township the previous year; the amount of all United States bonds; the amount of all state bonds or certificates of indebtedness of any kind, and the amount of all legal tender notes or other moneys now exempt from taxation by any law of the United States or any law of this state, owned or held by any person, firm, bank or incorporation, or by any other party whatever within this State. The assessor is hereby authorized to administer all oaths necessary to carry into effect the provisions of this act.

SEC. 2. The assessors shall make return of all the preceding statistics to their respective county auditors at the same time they return the list of personal property for taxation; and each county auditor shall make return of all such statistics returned to his office, to the auditor of state, on or before the first day of July annually; and the state board of agriculture and commissioner of statistics shall have access to the same at the office of the auditor of state.

Passed April 3, 1868.

AN ACT to provide for the establishment of a bureau of statistics in the office of the secretary of state, and to repeal certain acts therein named.

SECTION 1. *Be it enacted by the General Assembly of the State of Ohio,* That it shall be the duty of the secretary of state annually, hereafter, to prepare from the official reports, and from whatever other reliable sources to which he may obtain access, as full, accurate and intelligible tables of the statistics of Ohio as may be in his power, and report the results of his labors to the general assembly at its next meeting.

SEC. 2. That in order to the more perfect collection of the statistical information contemplated by this act, it shall be the duty of any state, county or other officer, without compensation, to answer fully and promptly such special and general questions as the secretary of state may ask in carrying out the provisions of the eighth section of the fifteenth article of the constitution of this state.

SEC. 3. That any person who, by this act, is required to give information, and who shall refuse or neglect to answer such questions, shall forfeit to the use of the state of Ohio any sum not exceeding fifty dollars, at the discretion of the court of common pleas for the proper county; which fine shall be collected by the prosecuting attorney thereof, as other fines are collected, by law.

SEC. 4. That the several classes of statistics now returnable to the auditor of state the attorney general or other officer, not necessary to the duties of such officers, be transferred by them to the secretary of State, and be by him embodied in the report provided for in this act.

SEC. 5. That for the purpose of the more complete and efficient performance of the duties enjoined by this act, the secretary of state is hereby authorized, if necessary, to employ some competent person, at an amount not exceeding five hundred dollars, to be paid upon the warrant of the auditor of state, in the same manner as clerks in the office of secretary of state are now paid.

Passed April 17, 1868.

AN ACT supplementary to an act entitled "an act for the encouragement of agriculture," passed February 28, 1846.

SECTION 1. *Be it enacted by the General Assembly of the State of Ohio,* That all county agricultural societies which have been or may hereafter be organized under the act to which this is supplemental, be and the same are hereby declared bodies corporate and politic; and as such shall be capable of suing and being sued, and capable of holding in fee simple such real estate as they may have heretofore or shall hereafter purchase as sites whereon to hold their fairs.

SEC. 2. That all deeds, conveyances and other agreements in writing, made to and by such county agricultural societies, for the purchase of real estate as sites whereon to hold their fairs, shall be good and valid in law and equity, and shall vest a title in fee simple in such societies to said real estate without words of inheritance.

SEC. 3. In all cases where such county agricultural societies shall have heretofore purchased or shall hereafter purchase real estate as sites whereon to hold their fairs, the county commissioners of such counties may, if they think it for the interest of the counties and societies, pay out of the county treasuries of such counties the same amount of money, for the purpose of the purchase and improvement of such sites, as shall have been or shall hereafter be paid by said agricultural societies or individuals for such purpose.

SEC. 4. In all cases where agricultural societies shall be dissolved or cease to exist, in any county where payments have been made for real estate or improvements upon such real estate, for the use of any agricultural society, then all such real estate and improvements shall vest in fee simple to the county making such payments.

Passed February 15, 1863.

AN ACT to prevent spreading of contagious diseases amongst horses, cattle and stock.

SECTION 1. *Be it enacted by the General Assembly of the State of Ohio,* That it shall be unlawful for any person to sell, barter, or dispose of, or permit to run at large, any horse, cattle, sheep, or other domestic animals, knowing such horse, cattle, sheep, or domestic animals are infected with contagious or infectious disease, or have been recently exposed thereto, unless he shall first duly inform the person to whom he may sell, barter, or dispose of such horse, cattle, sheep, or other domestic animal of the same; and any person so offending shall, on conviction thereof before any court having competent jurisdiction, be fined in any sum not less than twenty nor more than two hundred dollars, with cost of prosecution, or be confined in the jail of the county for not more than thirty days, at the discretion of the court.

SEC. 2. That if any person, being the owner or having the charge of any horse, cattle, sheep, or any kind of stock, knowing the same to be infected with contagious or infectious disease, shall knowingly permit it to come in contact with any other person's horses or stock, without such person's knowledge or permission, shall be fined in any sum not less than fifty nor more than five hundred dollars, with costs of prosecution, or be confined in the jail of the county for not less than ten nor more than fifty days, at the discretion of the court.

SEC. 3. This act shall take effect from and after its passage.

Passed April 16, 1867.

JOINT RESOLUTION, relative to printing the report of the state board of agriculture for the years 1867 and 1868.

Resolved by the General Assembly of the State of Ohio, That the secretary of state be authorized and required by law, under and in accordance with a law passed March 24, 1860, to provide for the execution and supervision of the state printing and binding, under the joint supervision of the supervisor of state printing and the secretary of the state board of agriculture to have printed and bound twenty thousand copies of the report of the state board of agriculture for the year 1867, and twenty thousand copies of the report for the year 1868, of which ten per cent. shall be printed in German, and the size of the type and mechanical execution to conform to the report of the said board for the year 1866; provided that nothing shall be published in said reports except such matter as is authorized by law, not to exceed in size the report of 1866; 2,000 copies of the report for the year 1867, and 2,000 copies of the report for the year 1868, [to] be subject to the order of the state board of agriculture, for exchange and foreign distribution; 18,000 copies of the report for each of said years 1867 and 1868, the secretary of state shall apportion among the present members of the general assembly—the number of German copies for each member to be determined by a list to be furnished the said secretary of state by the committee on agriculture in each house, on which list shall be stated the number of German copies desired by the several members. Said report shall be boxed up and directed to the care of the county auditor in the counties in which they respectively reside; and it shall be the duty of said county auditors to notify the respective members within ten days after the receipt of said reports, and if not removed by the person to whom directed, or on his written order, within thirty days, then the reports are to be, by the auditor, delivered to the president of the county agricultural society for distribution. The charges for the transportation of the said reports, as well as the charges for lumber and making boxes, shall be paid for in the same manner as is or may be provided by law for the distribution of the laws and journals.

Adopted April 30, 1868.

RULES

FOR THE

ORGANIZATION AND MANAGEMENT OF COUNTY AND DISTRICT SOCIETIES.

I. The Board of Directors for the management of County or District Societies shall consist of a President, Vice President, Treasurer, Secretary, and not less than eight managers, to be elected at such time in each year as the societies shall determine in their constitution or by-laws. The President and Vice President shall hold their offices for one year, and the managers for two years, and until their successors shall be duly elected.

The managers, at their first meeting after the first election held in pursuance of this rule, shall be divided by lot, as near as may be, into two classes; the terms of office shall expire, of the first class, in one year and of the second class in two years, so that one half of the managers may be annually chosen thereafter.

II. The Board of Directors shall elect a Treasurer and Secretary, who shall hold their offices for one year, and until their successors are elected.

III. Members of the Society must be residents of the county or district, must be over twenty-one years old, and must annually pay the sum of one dollar to the Treasurer.

IV. The Treasurer shall keep a list of the members of the Society, so that he may be able to report to the State Board the number of members each year, and so that it may be ascertained who are entitled to vote for officers.

V. County or District Societies may open their premium lists to all persons, without restriction, except on field crops, which shall be confined to the county or district.

VI. Competitors for premiums, residents of the county, must be members of the Society.

VII. All articles offered for premiums must be owned by the person offering the same, or by some member of his or her family.

VIII. Awarding committees must comply with the provisions of the law requiring competitors for premiums on crops and other improvements to furnish full and accurate statements of the process, expense of culture, production, &c.

IX. Competitors for premiums on crops shall be required to have the ground and its products accurately measured, and satisfactory proof, under oath, must be furnished by each competitor.

X. Each Society shall have duly prepared an annual report, and shall present the same to the State Board of Agriculture, on or before the annual meeting of said Board, as prescribed to be held by the sixth section of the " act for the encouragement of agriculture," passed February 29, 1861.

XI. Said report shall contain the following:

1. A list of the premiums awarded at the previous annual fair.

2. A copy of the published abstract of the Treasurer's account, as the same was published, in conformity with the third section of the above named law.

3. All statements of competitors for premiums on crops or other improvements in agriculture, detailing mode of tillage, &c., &c.

4. A general account of the proceedings of the Society, the number of its members, and the prospects of its progress and usefulness.

5. A statement of the principal crops raised in the county or district; an estimate of the amount of each raised; the average yield per acre; the striking characteristics of the previous season; the names of the destructive insects which may have injured crops; and such other facts as will tend to give a full view of the state of agriculture in each county or district, so that the same may be embodied in the succeeding annual report, made by the State Board to the Legislature.

XII. The Secretary of every County Agricultural Society which receives money from the county treasury, shall cause the official proceedings of the Society to be published in some newspaper of general circulation in the county.

The Treasurer of every County Agricultural Society which receives money from the county treasury, shall annually file, with the auditor of his county, a detailed statement showing the receipts and disbursements of the Society for the preceding year; and until such report is so filed, no money shall be paid out of any county treasury to any Society which may neglect or refuse to file such report.

APPENDIX.

SECOND ANNUAL REPORT

OF THE

OHIO STATE HORTICULTURAL SOCIETY,

FOR THE YEAR 1868.

OFFICERS OF THE SOCIETY FOR 1868:—*President*, DR. J. A. WARDER, Cincinnati; *Vice President*, G. W. CAMPBELL, Delaware; *Secretary and Treasurer*, M. B. BATEHAM, Painesville.

Members of the Ad Interim Committee, with the above Officers:—N. OHMER, Dayton; D. C. RICHMOND, Sandusky; A. B. BUTTLES, Columbus; N. L. WOOD, Smithfield.

AD INTERIM REPORTS.

BY DR. J. A. WARDER.

APPLES.—In the department of apples there is little to report. The crop has been short, except in a few favored localities, and in many parts of the State it has been a total failure. This is becoming a more and more frequent complaint as we progress in our horticulture and civilization, and the causes may be traced in some degree to the climatic changes that are resulting from the disappearance of the forests. But as the failure of our orchards is a subject to be treated on by a special committee at this session, we may hope for some valuable information upon this subject.

The set of blossom buds was large, and these expanded at their proper season in their usual beauty and abundance; those of the apple and pear appeared perfect, but those of the peach, cherry and plum were found defective in their germs, which had been blackened by the frosts. It was supposed, however, that those blossoms which did not present any apparent injury, were still weakened, and even killed or prevented from setting fruit, in consequence of their having been completely encased in balls of ice resulting from a storm of sleet after the buds had begun to expand, and these transparent globules were exposed to a bright sunshine.

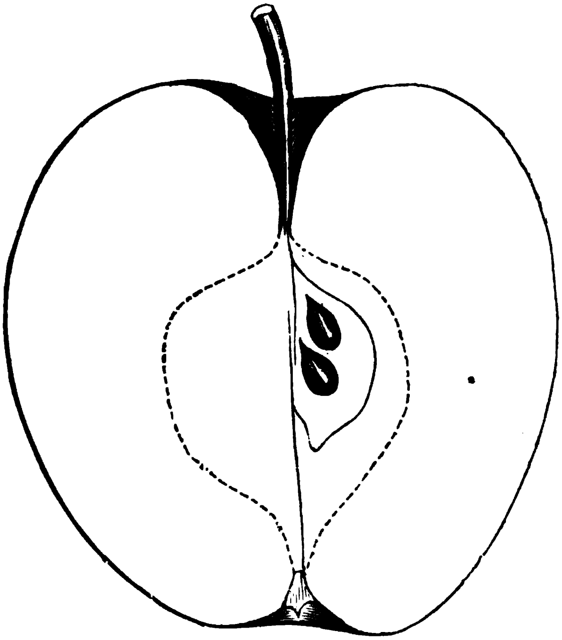
During the period of the blossoming the weather was cool, but not frosty nor rainy, and yet it was not favorable for the appearance of insects, which are believed to play a very important part in this act of inflorescence. Similar observations have been made in previous years in regard to some of our fruits, and similar failures have ensued. This curious fact of the necessity for insects to bear an important part in the transport of pollen from flower to flower, and even to excite its discharge from the anthers by the tittilation of their feet while visiting the blossoms in search of their food, has been observed and put upon record by some of our best botanists. You are referred to the very interesting papers by Professor Asa Gray, which appeared in the *American Agriculturist* for ———. In the cases cited by this learned professor, the structure of the flowers is so peculiar that it would seem utterly impossible for the pollen to pass from the stamens to the pistil, unless it were aided by some foreign means, such as are presented by the hairs and bristles with which insects are clothed; but even common flowers seem to need this insect interference.

While we suffer so very extensively from the ravages of some members of this class of animals, it is really most pleasant to discover that there are others which are so useful. It becomes us, as horticulturists, to study these creatures; and the necessity is more and more sensibly felt for the appointment of a State Entomologist to aid us with his knowledge of insects.

In so extended a region as that of our State, it seldom happens that any local causes of such an unfavorable character should extend over the whole area; and if such an occurrence were to be observed, we should also find different stages of development of the vegetation in different latitudes; so that while the blossoms were fully expanded in the southern portion of the State, the buds of the same plants would scarcely be swollen at the northern border. In this way, while one section may suffer from these direct and indirect climatic causes, another region will escape injury and be favored with full crops of fruit.

NOTE.—The cuts in this article were made for the *Horticultural Annual* of Orange Judd & Co., New York.

NEW APPLES.



FLORY—*Syn. Flory's Bellflower—Sheep's-head.*

This new Ohio apple has been presented at some of our previous meetings, but not in a condition to be fairly judged; it was too ripe; but this season it has been examined in its proper season, and is found to be a valuable orchard fruit. The Flory originated in the neighborhood of Dayton, Montgomery county, a region of comfortable farmers, who have long had good orchards, and whence we always look for interested and intelligent members of this Society, and from whose horticultural society we shall expect much aid in carrying on our work.

Some trees were planted by a Mr. Flory, who procured them from one of the early seedling nurseries of early times. One of these being planted near the barn, produced this variety of fruit, which was called the *Sheepshire* from this circumstance, and it became a favorite with the family, and was locally propagated by them. Mr. J. M. Turner established a nursery and propagated this variety, which he disseminated as the *Flory's Belleflower*, the name by which it is known in that region.

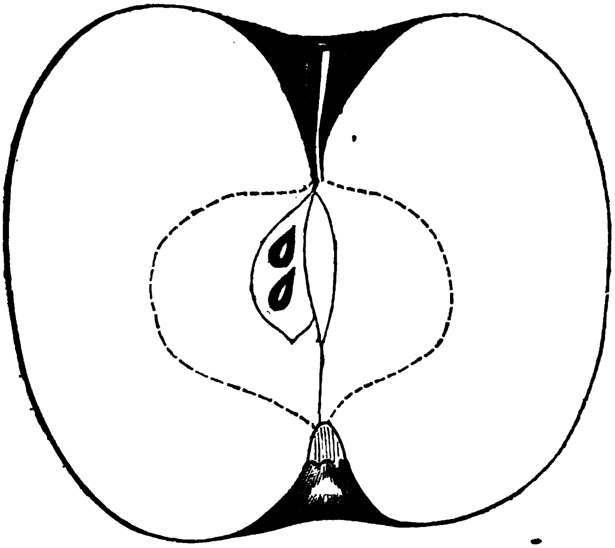
Messrs. Kinsey & Gaines, nurserymen near Dayton, have kindly furnished me with these items of history, and have sent the fruit and the young trees. They say that they have propagated and distributed more trees of this kind than any other variety.

In naming this fruit I have used the shorter term *Flory's*, because it fixes the history of the apple and is shorter, and because the word Belleflower does not appear appropriate.

Tree vigorous, erect, and handsome; not early-productive, but when sufficiently old it bears regularly a fair crop of smooth, handsome fruit, which sells well in the market, and is a favorite in the kitchen and family.

Fruit large, globular-oblong, regular; surface, yellow; dots scattered, prominent, brown. Basin shallow, sometimes folded; eye medium, closed; calyx reflexed. Cavity acute, deep, regular; stem medium to long. Core large, condate, closed, meeting the eye; seeds numerous, pointed, angular, dark. Flesh breaking, light yellow, juicy; flavor, sub-acid; use, market and kitchen; quality good to very good for its uses; season, September and October.

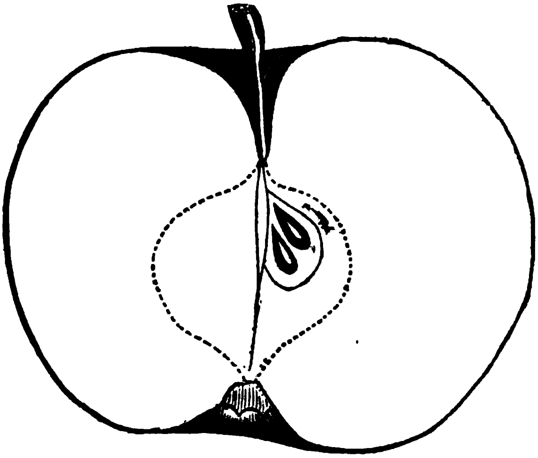
Diagnosis.—Class IV. Order I. Section 2. Sub-section 1.



MOORE'S EXTRA.

This is an Ohio seedling, introduced, propagated and brought to the notice of this Society by our worthy fellow member, James Truitt, of the Quincy Nurseries, in Kentucky. The original tree was found in an orchard on the north bank of the Ohio River, where it is believed to be a seedling; but its early history is not known. The tree is vigorous and upright in the nursery, but becomes spreading in the orchard, where it is a moderate annual bearer of fair and large apples. Fruit large to very large, globular, truncated, mostly regular; surface smooth, light yellow, nearly covered with stripes and splashes of bright red; dots scattered, small, grey and brown; basin deep, abrupt, often furrowed; eye medium, open; cavity deep, regular, brown; stem medium in length and size; core rather large, regular, open; seeds numerous, dark; flesh yellowish, breaking and rather tender, not fine-grained; flavor sub-acid, aromatic; quality good; use, market and kitchen; season, December and January.

Diagnosis—Class III. Order I. Section 2. Sub-section 2.



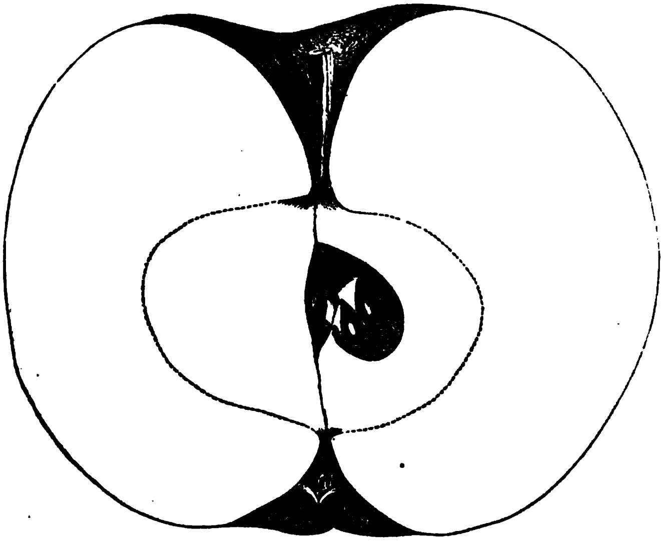
WEALTHY.

This variety was received from J. S. Shearman, of the Northwestern Nurseries, Rockford, Illinois, who has long been seeking hardy varieties of apples for the northern regions. This he considers a northern star, as it is a fruit of fair size, of fine, showy appearance, very good in quality, and believed to be hardy, as it has lived and fruited on the site of its origin, thirty-five miles north of St. Paul, Minnesota, on the banks of Lake Minatauka, where it grew from seeds brought from Maine by Peter M. Gideon. The tree is now thirteen years old, vigorus, healthy, and has withstood the severity of the climate for that length of time, through the critical period of infancy. Fruit medium, globular, oblate, regular; surface smooth, yellow, covered with stripes and washings of carmine; dots numerous, small, fawn-colored and grey; basin wide, regular; eye medium, open; cavity medium, regular, smutchy; stem long; core small, closed, meeting the eye; seeds numerous, acuminate, angular; flesh yellow, tinted pink, fine-grained, juicy; flavor sub-acid, aromatic; use, table and kitchen; quality very good; season, early winter.

Diagnosis—Class III. Order I. Section 2. Sub-section 2.

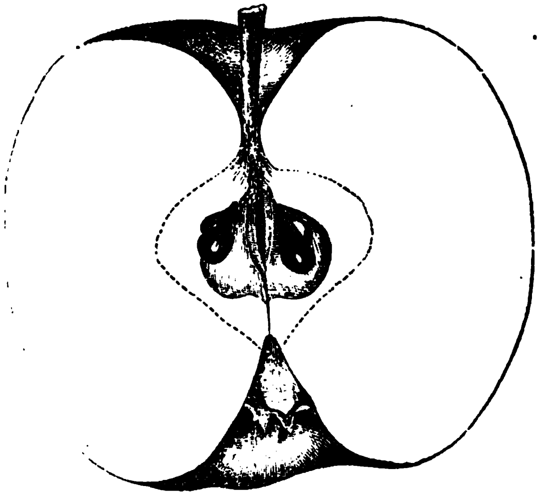
STARK.

History unknown to me. Tree healthy, vigorous, with open, round head, needing little pruning; very productive of large fruit, which hangs well and is easily gathered. It is an early bearer, and continues healthy to a good old age. These traits are gathered from my friend, H. McMaster, of Leonardsburgh, O., who has grown it for several years. Fruit large and handsome, oblate or globular-oblate, regular; surface smooth, yellow, nearly covered with stripes and splashes, and mixed bright red; dots scattered, large, grey; basin wide, deep, wavy; eye large, open; cavity wavy, smutchy; stem very short and small; core medium, closed, meeting the eye; seeds numerous, angular, pointed; flesh light yellow, breaking, firm, rather dry; flavor sub-acid; use, market and kitchen; quality good for these purposes; season, December to February, or later. The size, showy appearance, firmness in transportation, and color, hiding the effects of bruises, make this apple well suited for market, while the vigor and productiveness of the tree must render it profitable in the orchard.



POWERS.

This beautiful apple has again made its appearance at the State Fair, where it was compared with some of the most showy fruits of the season. It has not yet been fruited, except in its original locality.



GRIMES' GOLDEN.

This prime favorite is again before us in its modest garb of plain yellow, but sound, plump, and full of sparkling, sprightly, aromatic and refreshing juice. The persistent bearing of this variety is one of its very good qualities, and then the tree appears so hardy, and is built up in such a regular and stocky manner, as though it would defy injury from the weight of its own fruit for a constant succession of years. Those planted in Carroll county have again borne a crop of fruit this year, the eleventh continuously, and our worthy friend, Samuel Wood, of Smithfield, has harvested his twenty-second crop of the Grimes, without a failure.

NEW MISSOURI APPLES.

From my kind friend, and devoted pomologist, Mr. A. M. Lawver, I have received several very fine fruits that had been sent to him from western Missouri. Among them the following have been selected as worthy of being put upon record:

"ST. JOE SEEDLING."

Credited to Mr. Thorn, and said to be very popular in Missouri. Its size and quality entitle it to praise; indeed, its excellence makes it rank with the Hubbardston. Fruit large, globular, regular; surface not smooth, bright red mixed on yellow, striped with dark red; dots large, brown; basin medium, regular, much leather-cracked; eye large, closed; calyx reflexed; cavity medium, regular, brown; stem short, thick, green; core heart-shaped, open, clasping the eye; seeds numerous, long, acuminate, angular, light brown; flesh yellow, fine-grained, juicy; flavor sub-acid, rich, aromatic; use, table and market; quality very good; season, December.

Diagnosis.—Class III. Order I. Section 2. Sub-section 2.

"ZIMMERMAN."

This beautiful fruit is not recognized as any known variety. Fruit large, oblong, truncated, regular; surface smooth, bright red on yellow, splashed bright red; dots numerous, grey and fawn-colored. Basin deep, regular; eye small but long, closed. Cavity deep, acute, clean; stem medium, brown. Core medium, closed, clasping the eye; seeds few, short, plump, wide; flesh light-yellowish, breaking, fine-grained; flavor sub-acid, mild, rich, but not high-flavored; use, table and market; quality good to very good; season, December.

Diagnosis.—Class IV. Order I. Section 2. Sub-section 2.

"PARKE'S KEEPER."

This is claimed to be a seedling, but like the favorite of that country, the "*Missouri Keeper,*" it resembles the *Large Striped Pearmain* so closely that it is difficult to distinguish the fruits. Mr. Lawver writes that the trees seem to be different, "having a more upright growth." He also says it is considered a seedling, because "it was found in Mr. Gray's old Indian orchard."

Fruit large to very large, globular, regular; surface smooth, yellow, partially covered with mixed light-red, and short splashes of bright scarlet; dots few. Basin very shallow, regular; eye medium to small, closed. Cavity acute, regular, brown on green; stem medium, yellow. Core large, round, somewhat open, meeting the eye; seeds numerous, long, pointed; flesh light yellow, breaking, fine-grained, juicy; flavor sub-acid to acid; uses, table, market and kitchen; quality good to best; season, December and all winter, a keeper.

Diagnosis.—Class III. Order I. Section 2. Sub-section 2.

LAWVER.

Fruit large, regular, oblate, handsome; surface smooth, deep red; dots numerous, fawn colored. Basin medium, regular or slightly ribbed; eye small, closed. Cavity acute, regular, brown; stem short. Core wide, regular, closed, not meeting the eye; seeds plump, dark brown; flesh yellow, breaking, fine-grained, juicy; flavor acid, aromatic; use, table, market and kitchen; quality best; season, December and all winter.

This is one of the most beautiful and promising of the new apples. It has been called the Baldwin for the West. "It excels in color, size and quality." Beautifully figured and colored by D. M. Dewey, Rochester, New York.

Diagnosis.—Class I. Order I. Section 2. Sub-section 1.

This beautiful apple was named by its producer, Mr. Parke, of Missouri, in honor of A. M. Lawver, who has been devoting many years to the development of pomology near South Pass, Illinois, where he has some thousands of varieties growing in an experimental orchard, which is probably the most extensive in the country.

NEW YORK GRAPE SHOW.

The Grape-Growers' Association of New York held its first annual exhibition in the beautiful town of Canandaigua, on the 7th and 8th days of October. The display of grapes from various parts of the State, from adjoining portions of the lake shore and from Canada, was indeed very fine, and was considered one of the best shows ever made in the United States. The best and most abundant collections were from the favored portions of western New York, particularly from the lake regions, which seem to be well adapted to vine culture.

The attendance at this meeting was large, and embraced many distinguished horticulturists from beyond the limits of the Empire State, among whom the venerable Marshall P. Wilder was heartily welcomed. As delegate from our own State Society, I was most kindly received. In the evenings there were discussions relative to grapes and grape-growing, but the subjects were found to be so extensive that the programme was not nearly exhausted, and many important topics were not reached.

The annual address was prepared by C. W. Grant, of Iona Island, in the Hudson. He divided the history of grape culture in the United States into three great stages, indicating progress toward perfection: The first was the period of the natives, inferior; the second was marked by the introduction of the Isabella and Catawba, which were a great advance, but he considered them quite faulty; the third period was inaugurated by the Delaware, and followed by his own pets, the Iona and Israella. Of course the address indorsed these last very highly, and was less complimentary in regard to some of the other candidates to public favor. At the close of the reading considerable feeling was manifested by those who were interested in other grapes. However, a vote of thanks was presented to the writer for the preparation of the annual address, with the understanding that this did not commit the members as indorsing all the positions and views of the paper.

The Iona grape was exhibited in many of the collections, and as it has this year fruited in widely distant portions of the country, we have all had an opportunity of judging for ourselves. Notwithstanding its excellence in many particulars, it does not appear to be an early ripening variety, and it has been shown in an immature condition upon many occasions. With a favorable season and greater age of vines, it will doubtless ripen earlier.

The Israella made a good show, and seems to be winning its way as an early market variety. It has many warm friends, but the bunches are too much crowded, and the quality cannot be considered superior to several others of its season.

The Rogers' Seedlings, or Hybrids, as they are called, were very largely contributed to this exhibition, and attracted a great deal of attention. Many of them are very promising for market, and some may do for wine. Among them the *Salem* made a very fine appearance, with large bunches and berries of a pleasant and attractive color. The owners have shown their confidence in it by planting thirty acres of it in vineyard.

Our old friend the Catawba was exhibited in quantity from many localities, and its condition as to ripeness was often very well advanced, especially in those from Hammondsport; though in many other places the crop did not attain its perfect condition this year in consequence of unfavorable climatic influences.

The following report of the discussions at the evening meetings, was made for the *American Journal of Horticulture:*

GRAPE DISCUSSIONS AT CANANDAIGUA, N. Y.

A large meeting convened in the evening, and was called to order by the President, Hon. E. B. Pottle, who proposed that gentlemen present make reports of the condition of the grape crop in their several localities before entering upon the discussion of the topics prepared for the regular programme.

Mr. M. P. Wilder, of Massachusetts, was first called on. In his usual happy vein, this gentleman congratulated the Society on the success which had attended their efforts, and pronounced this the finest exhibition of grapes ever seen upon this continent. In reporting for Massachusetts, he could only speak of failure, which he accounted for by referring to the unusual quantity of rain-fall, that was stated to have been thirteen and a half inches in place of the average of three and a half in the same period.

John A. Warder reported for southern Ohio, that their old favorite, the Catawba, had proved very unsatisfactory in its crops for several years. The Concord and Hartford were successful; but the Norton and the Ives were the favorites with most planters; and the latter was spoken of as very successful in that region, because of its sterling qualities of perfect health, thrift and productiveness, which put the Ives in the first rank as a vineyard grape.

William Griffith, of North East, Penn., stated that, so far as he had observed, the whole Lake-shore region, from Cleveland eastward to Chattaraugus Creek, was successful this year.

Mr. T. L. Harris, from Salem-on-Erie, Chautauqua county, N. Y., had found no mildew or other disease upon the vines of that region, which were very productive and successful. This he attributed to the influence of the lake, and a range of hills to the southward, among which was imbosomed the Chautauqua, seven hundred feet higher than Lake Erie. This favored region extended about two miles by seven; and he was sure that the spirit of the vine presided over that spot. Some insects had made their appearance upon the foliage, but nothing serious.

Mr. A. S. Fuller, of New York, answered for that region and the neighboring portions of New Jersey. The crop of this year was not very promising. In view of the great success that had attended grape-planting in certain regions, he recommended the selection of these favored localities.

Hon. J. Larrowe, of Hammondsport, N. Y., stated that, after fifteen years' experience, chiefly with the Catawba, they still found it successful, and that it ripened well. During this season the thrips *(Tettigonia vitis)* had been very troublesome, and a sudden change of temperature had produced some mildew; but this was easily checked by the sulphur and lime solution. This is prepared by slacking twenty-four pounds of lime with one pound of sulphur, using hot water, and then reducing this with three barrels of water, to be applied with a syringe. He prefers the slopes near the lake for the Catawba, sheltered by a higher background.

Mr. Roberts, after a residence of three years in North Carolina, said that grapes generally do well there, particularly Concord, Hartford and Catawba. He referred to the famous Scuppernong, which is so much admired in that State, and to the specimens on exhibition. It was asked how the wine was made, and whether or not sugar and whisky were always added to the juice; to which Mr. Roberts responded, that both were used. In answer to a query, Dr. Van Keuren stated that the must of the Scuppernong grapes sent to him from Enfield, N. C., did not weigh more than 1.0050 by the wine-scale; which shows a very small proportion of the saccharine principle.

The President then called the order for discussion; the first item being soils, and their preparation for planting. Mr. Fuller thought this a question which could not be settled for all parts of the country, since the soils were so different that what might be suitable in one place would not be practicable in another.

Mr. A. J. Caywood, of Poughkeepsie, advised the deep plowing of a piece of sward six weeks before planting. This decaying vegetable matter he thought equal to twenty-five dollars' worth of manure.

Mr. Griffith thought that almost any soil which was not wet would answer for a vineyard. He would also avoid a hungry sand. The land should be porous; if not sufficiently so, it should be made loose by drainage and cultivation.

Mr. Underhill, of Brockton, N. Y., had a soil very different from the shingly gravels and loams of North East. His was a sandy loam, lying between the lake and the range of Chautauqua hills. On this land grapes do well; so they do on the hillsides, up to a certain height (five hundred feet), the soil being clayey, with many stones. Upon this the vines yield well, ripen early, and the grapes contain more saccharine matter than those grown on the plain below.

Mr. Hoag, of Lockport, on low lands, presented a very good report of his success on that soil with a great variety of grapes; indeed, his beautiful and extensive display upon the tables spoke volumes for the adaptability of his land to grape-growing.

Dr. F. M. Perrine, of Dansville, made some interesting remarks respecting the soils of that region and the growth of the vines.

Mr. Keech, of Waterloo, thought his land might be too rich; but the early varieties have done well this year, which has been very dry. His Ionas were ripe on the 10th of September. He had seen some thrips, but they were late, and did little damage.

Mr. Younglove, on the slopes of the lake, on a sandy loam, good wheat land, had found grapes do well and ripen early. They retained their foliage perfectly.

The next order being called up—pruning, and the season in which it should be done—

Judge Larrowe premised by saying that this was a matter in which we should be guided by common sense. He would prune close in the winter to prevent over-production; a small crop is always better than a large one. He allowed his Catawbas to carry ten pounds; five would be better. In summer, he preferred to let the vines alone; but if they got above the stakes or trellis, they might be cut off. He preferred pruning in the fall rather than in winter or spring.

The President thought that no absolute rule could be laid down which would be applicable to every vine in any vineyard. There were different habits of growth in the several varieties, and different conditions of strength and vigor in the several plants. He had seen seventy to eighty pounds of grapes upon a single vine; he had harvested from sixty to seventy pounds in his own vineyard. He thought that some vines should be set at wider distances on rich land, ten or twelve feet apart; and some kinds even sixteen or eighteen feet. He did not advise manuring.

Mr. Griffith made some excellent remarks upon pruning, in which he showed that the amount of cutting should bear a direct relation to the space of ground occupied by each vine. He would prune also according to the variety of grape, and the soil in which it had been planted. He objected to the severe summer pruning practised by some vignerons;

pleading the necessity of leaving the foliage to effect its peculiar functions, particularly in regard to the ripening of the fruit. He thinks that, for most varieties, six feet space is sufficient. (Thirty-six?)

Judge Larrowe coincided, but would select the soils for the vines, and also plant wider or closer upon the same principle, using poor land and wider spaces for the most vigorous sorts.

The discussion upon this very important subject was exceedingly interesting, and might have been extended, with great profit to the assembly of practical grape-growers, but was prevented by the lateness of the hour.

SECOND EVENING.—The meeting was opened by the President reading the list of awards made by the several committees during the day. The Secretary then read a very interesting address prepared by the veteran vine-grower, Dr. Grant, of Iona Island, in the Hudson. The subject was the successive advances of grape-culture in the United States, which were ranged in three stages—those of the original natives; of the introduction of the Isabella and Catawba; and lastly by that of the Delaware, and of the Iona and Israella, his own productions. The writer made a very strong case in favor of his pets, and was less complimentary in regard to some other candidates for the public favor. Of the Hartford, he said that it was "Nature's most successful effort at improvement." The thanks of the association were voted to Dr. Grant for the preparation of the annual address.

Discussion of the paper was passed by calling the order, "Varieties, and their adaptation to soils; when several speakers occupied the attention of the meeting, giving their views upon the several sorts under cultivation.

Mr. Gedge, of Vineland, N. J., reported a good crop of Concord and Hartford, which were productive, healthy and profitable; but stated that the Delaware, Iona, Israella and others, failed in their locality.

Mr. Underhill thought that the Iona would prove to be a good wine grape; and, as many vines are fruiting this year, we may hope for a satisfactory test. The Roger's Hybrids will rank high for the table (market?) on account of their showy appearance. Israella will soon supplant the Isabella.

The discussion closed without taking up the other orders prepared by the committee, and the meeting adjourned *sine die*.

NOTES ON SMALL FRUITS IN 1868.

BY GEO. W. CAMPBELL.

STRAWBERRIES.

The past season was quite favorable for the ripening of strawberries, but the excessive heat and drouth of the summer following was very trying to the plants, especially of varieties of foreign origin.

JUCUNDA.—Upon well-cultivated plants, kept free from weeds and runners, were very fine, and produced abundantly, berries of the largest size and superior flavor. Moderate and frequent showers, followed by bright sunshine, during the ripening season, gave them unusual excellence. The foliage, however, suffered greatly during the summer from the great heat, becoming badly browned, and formed very few new plants.

CHARLES DOWNING.—This variety fruited upon plants set late last fall (1867). The winter was severe, and a few were thrown out by the frost; but they were generally in good condition in spring, and bore, I thought, remarkably for plants so late planted, berries of large size and very fine flavor. The foliage proved very strong and healthy, remaining green and fresh under the severe heat, and made abundant and strong plants of great strength and vigor. A very promising variety.

AGRICULTURIST.—A good variety if well cultivated, enduring both severe winters and hot summers very well. In strong, rich soil makes strong plants, and runs enormously if permitted. When allowed to run and cover the ground, produces a large proportion of small, and many irregular and imperfect berries. To produce good results requires hill culture and careful removal of runners.

GLOEDE'S PERPETUAL (?) PINE.—I am afraid this much vaunted berry of the European catalogues must be pronounced a failure, if not a swindle for this country. Plants received in the winter of 1866 and planted out doors the following spring made a fine growth, and remained perfectly green and healthy during the summer of 1867, but neither bloomed or gave any indication of a "perpetual" character. The following season it bore a fair crop of medium sized berries, of handsome appearance and a delicate pine flavor. After the first fruiting was past, a few plants, from which the runners were carefully removed, threw up new fruit stalks; but the succeeding hot and dry weather burned the plants to such an extent as nearly to destroy the entire bed. From the experience of the past season, I must pronounce it unworthy of attention in this locality.

Rivers' Seedling Eliza.—I have cultivated this variety to a limited extent for several years, and regard it in some respects superior to the Jucunda. It is a stronger vine, of more vigorous growth, and endures severe freezing and summer heat with less injury. The berry, though very large and handsome, is a little less as an average than the Jucunda, and the quality fully as good. I regard it as one of the most valuable of the foreign kinds that I have grown.

Durand's Seedling.—A handsome berry, of bright color, good size, and tolerably firm; foliage good, plants vigorous; too acid, however; in flavor not better than Wilson, and apparently much less productive.

Burr's Pine.—There have been doubts expressed for some years whether this variety still exists, and many believe its place is usurped by a spurious variety bearing its name. It has been stated that the true variety is white-fleshed, the spurious pink. The plants from which I have grown this variety for many years came originally from Mr. Burr, and I have always regarded it as true, and the earliest and most valuable variety for home use, bearing well, and of the highest quality and flavor. It is, however, pink-fleshed. I have sought in vain for an accurate description of this variety published about the time it was introduced. I find, however, in Pardie's "Strawberry Culture," published in 1857, the following description, which accords with the variety I have grown and always supposed true:

"The fruit is large, round, conical and even; color, pale red; seeds very slightly sunk; flesh *whitish pink*, sweet, too tender for a market fruit; quite productive, and berries perfect; the foliage is large and the plant vigorous and healthy. It is indispensable for private gardens; pistillate."

The only fault I find with this variety for home use is, that it is pistillate, and requires the presence of some staminate variety to produce a good crop. I wish parties who have the Burr's Pine would make examination, and if any have a purely white-fleshed variety, report at the next meeting of our Society, or through our horticultural journals.

RASPBERRIES.

Clarke.—I still regard this variety as the best hardy raspberry I have ever grown, and believe it will be found very valuable for general cultivation. It is remarkably vigorous in growth, with stout, strong canes, and abundant, healthy and luxuriant foliage. Its fruit bright red, large and of best quality. It has endured the past three winters without apparent injury; being exposed in one instance to 25° below zero, without any covering or protection.

NAOMI.—The identity of this variety is still, I think, involved in doubt; and the opinions about it, as well as the plants heretofore sent out, are very much "mixed." After examining the plants in various localities the past season, I am forced to the conclusion that the variety now called *Naomi*, is really and only the old Red Franconia; and that the seedling or seedlings of Mrs. Wood are, by those having this Franconia, regarded as spurious. Mr. Elliott, who has given the subject much attention, feels certain that *there is* a *true* Naomi; but he admits that it is, in growth, foliage and fruit, so nearly identical with the Franconia, that little or no difference can be detected in them; and that the only appreciable difference, is the greater hardiness in winter of the *Naomi*. On the contrary, Dr. Kirtland concludes, after careful examination of the subject, "that the *true* NAOMI, as claimed by Messrs. Elliott, Hall and others, is no other than the old RED FRANCONIA." The variety which the Doctor received from Mrs. Wood, and which he considers as the "*true* NAOMI," differs from the Franconia in having narrower and more pointed foliage, fruit more irregular, and not as firm; and canes smoother, and with fewer spines than the *other* "true Naomi." Besides all this, the Doctor had furnished Mrs. Wood, and others, from whom this latter-day "Naomi" has been received, with plants of the *Red Franconia*, many years ago, and before Mrs. Wood's seedlings were grown. I know it is sometimes very difficult to establish the identity of plants; and make these remarks to induce caution in planting too largely till the matter is definitely settled. The Franconia is perhaps the hardiest of that class of old varieties; and often stands the winter here, without protection. I am also informed, that the so-called "Naomi," has not been found always hardy about Sandusky, and upon Kelley's Island. And furthermore, if the really *true* Naomi is so nearly the same in appearance with the Franconia that experienced horticulturists cannot distinguish between them, what is to hinder tree-dealers and nurserymen, so disposed—for I have heard that they are not *all* quite immaculate—from selling "*true* NAOMIS" from their stock of Franconias, at four or five times the price they would bring with a Franconia label; and how could they be detected?

KIRTLAND.—This variety has always been very satisfactory here. Perfectly hardy, vigorous in growth, and productive. Of good quality, but not equal in size or flavor to the Clarke. Does best on strong, fertile soils. Has been found more satisfactory south and west, than at the east.

PHILADELPHIA.—Hardy, vigorous and productive; but dull in color, and inferior in quality.

In addition to the above, I have under trial Lum's Everbearing, Davison's Thornless, Prosser, Mammoth Cluster, Canada Black, McCormick's Miami, and others, but have not sufficiently tested them to report satisfactorily.

BLACKBERRIES.

The KITTATINNY has proven hardy and remarkably vigorous in growth thus far. Its productiveness I have not tested, having grown it for plants instead of fruit. It is in size and quality very satisfactory, and, I think, the most promising variety for this section.

WILSON'S EARLY, is less vigorous in growth, and has not proven quite hardy. Requires further trial to determine its value here.

Exhibition of the Cincinnati Horticultural Society, September 22d–25th, 1868 *—Award of the Longworth Grape Prizes.*

This exhibition was held in the Skating Rink, which was beautifully decorated with evergreens and rare greenhouse plants and shrubs, presenting a pleasing and tasteful appearance, very creditable to the Society. A special attraction was the display of the beautiful and liberal premiums of silver plate offered by Capt. W. P. Anderson, of the Longworth wine house, for the best table and wine grapes "for the State of Ohio," and "for our whole country." The exhibition tables were well covered with specimens of a very large variety of native grapes, many varieties being in large quantities, both upon plates, in baskets, and upon the canes as grown in the vineyard. Remarkably fine displays, both in quantity and quality, were made of Delaware, Concord, Ives' Seedling, Norton's Virginia, Rentz Seedling, and Herbemont. The premiums above named were awarded as follows:

1st. "For the best wine-grape for the whole country," silver plate, consisting of an elegant pitcher, waiter and two goblets, valued at $300, was awarded to IVES' SEEDLING, exhibited by Louis Finch.

2d. "For the best wine-grape for Ohio," silver goblet valued at $100 was awarded to CONCORD, exhibited by E. A. Thompson.

3d. "For the best table-grape for our whole country," silver goblet valued at $50 was awarded also to Concord, exhibited by Frank Murphy.

Among other objects of interest, I noticed some handsome specimens of the MARTHA grape, exhibited by Mr. Knox, Dr. Warder, and others, which attracted some attention as the "coming white grape" for the people.

Also, one of the new southern seedlings, marked "CHESTER NO. 14," a black grape, of small or medium size, without pulp, and of pleasant, sprightly flavor. Leaf large, decidedly native, and tomentore or woolly on the underside. Promising, if hardy.

BLACK HAWK.—A small bunch, evidently the first fruit of a young vine. An intensified Concord, in general character and flavor. Apparently sweeter, rather better flavored, and earlier than Concord.

SCUPPERNONG, *both black and white, from North Carolina.*—Berries very large, nearly an inch in diameter; skin thick; very pulpy, with a peculiar aromatic flavor; sweetish, but not rich or agreeable. Much like the native Fox grape of the north, and can scarcely be called better.

SEEDLING, *from Herbemont.*—A handsome grape, with medium-sized compact bunches. Rather lighter colored than Herbemont, and I thought not its equal in flavor and quality.

COLUMBIAN WHITE, *of Longworth.*—A small white grape, which seemed to me very much like the Taylor Bullitt, both in general appearance and flavor.

CREVELING.—Some specimens of this variety exhibited in Dr. Warder's collection, were worthy of remark for perfect ripeness, and very fine quality. Notwithstanding its characteristic looseness of bunch, it was regarded as having no superior in quality among all our native black grapes.

G. W. C.

EASTERN OHIO FRUIT CROP—1868.

BY N. L. WOOD.

Our fruit crop in eastern Ohio, this season, was considerably below the average yield. Of small fruits there are few raised, except in private gardens. The Wilson strawberry, Lawton blackberry, and Black Cap and Purple Cane raspberries are almost the only kinds grown, though some persons are now planting the Jucunda strawberry, Kittatinny blackberry, and some of the newer varieties of hardy raspberries.

Cherries rotted very badly on the trees. The Bigarreau varieties and Gov. Wood seemed to suffer most, and May Duke and early Richmond least.

Peach buds were many of them killed in early winter, while the twigs and buds were coated with ice, at a temperature of 4 or 5 degrees below zero; and again, in March, covered with ice as before, and the temperature a little lower, many more were destroyed—in some orchards leaving very few, in others one-fourth to one-half a crop. The early varieties, and Hale's Early, most of all, rotted and fell from the trees badly before maturing, while some of the later varieties matured, and, notwithstanding the extreme dry weather, were very fine. Among these might be named Crawford's Late, Brevort, Morn's Red, Red Cheek, Malacaton, Smock and Heath Cling.

Plums, in our villages, where nearly every lot contains more or less trees, were an abundant crop; but in the country all were destroyed by the curculio. The Turk seems to be partial to rural life.

Pears, though not quite a full crop, were fine. They seem to escape the attacks of insects and other casualties, except blight, better than most other trees and fruits.

Apples were, if possible, more defective and wormy than ever; and orchardists begin to see that, to make apple-growing profitable, they must adopt a different plan from the old let-'em-alone system that has generally been practised here. New orchards must be planted in place of the old ones that have been doing their owners good service for forty years, with little or no care bestowed on them in return. Younger orchards, still in their prime, must be carefully pruned, the ground cultivated and enriched, and every possible means should be employed to check the rapid increase of insects so destructive to tree and fruit.

Grapes, particularly Catawba, in gardens and small vineyards throughout the country, were badly damaged by rot and mildew; but along the Ohio river, near Martinsville and Bridgeport, where our largest and best vineyards are, the grapes were extra good and the yield very satisfactory. A considerable portion of the crop was marketed in the Eastern cities, bringing good prices. Wine makers at home paid 5 and 6 cents per pound for Catawbas.

I know of no new vineyards being planted. To some of the older ones are being added, or changing from Isabella to Ives, Iona, Delaware, Virginia Seedling and Concord. Many who had the "grape fever" a few years ago, are beginning to discover that grapes cannot be successfully grown on every piece of land that lies to the sunshine.

SMITHFIELD, JEFFERSON COUNTY, O.

GRAPE CULTURE ALONG THE LAKE SHORE.

BY M. B. BATEHAM.

The Lake Shore Grape Growers' Association, now the *Ohio* Grape Growers' Association, and the most important auxiliary of our Society, was quite active the past year, in attending to the branch of horticulture to which it is devoted. The result of the season's labors of the vineyardist, however, were not generally as favorable as had been anticipated.

The summer meeting of the Association, for the inspection of vineyards, was held on the 25th and 26th of August. The first day was devoted to the vineyards of Collamer Ridge and East Cleveland. The weather was fine and the attendance quite large, and the vineyards, which are quite numerous and extensive, were found in excellent condition, and promising an abundant crop of fruit.

About Collamer especially are a number of the most noted and successful vineyards in Northern Ohio; among these may be mentioned that of Dr. Dunham, the President of the Association, entirely of Catawba, and always yielding fine crops; and younger ones of Messrs. Searles, Saxton, Huntington, Ammon, Adams, Hastings, Burton, and others; also the beautiful vineyards of Paul Schmitt and Geo. Leick—the latter especially interesting on account of the large number of varieties of grapes in bearing, and the excellence of the trellising and culture.

West of Collamer village, the vineyards of Messrs. Stanley, McCroskey, Hall, Doane, Ford, and others, were visited by more or less of the party; and eastward, towards Euclid, were found the promising young vineyards of Messrs. Swan, Harmes, Haskell, Chapman, and others.

All the vines of sufficient age were bearing an immense crop of fruit—too much, indeed, for the good of the vines and their owners, especially as the season proved unfavorable for the perfect ripening of the crops, excepting where the soil and culture were of the best character.

Towards evening the ladies of Collamer provided a bountiful entertainment for the two hundred or more visitors, in the grounds of the Academy; at the close of which an hour or two was devoted to speeches reports on the condition and prospects of the grape crop in various parts, &c. The remarks were all of the most hopeful character, excepting that misfortune had befallen the vineyards in the vicinity of Sandusky, and the Islands—most of the fruit having rotted or failed to set, in consequence, it was thought, of excessive rains the last of June or early in July.

The second day was devoted to the vineyards west of Cleveland, especially at Dover Bay and Avon Point. At the former place the vineyards of the Dover Bay Company, consisting of about seventy acres, one-half in bearing, and all in beautiful condition, were much admired by the visitors, as were also the smaller vineyards of Messrs. Brown and Stevens and Bailey in the vicinity, and the pioneer vineyard of Mr. Atwell, a couple of miles south.

The Dover Bay vineyards, and those at Avon Point, are on level clay lands, formerly thought too poor for profitable farm culture, but with thorough draining and deep-plowing, found to be the very best for grape vines.

At Avon Point the number of acres of vineyards now mostly in bearing is about 250. Of this amount, nearly one-half is owned and managed by Mr. E. Boyd, of Elyria, for himself and several other gentlemen, and the condition of the grounds and vines bears testimony to the judgment and skill with which the work has been done. Messrs. Johnston, Bullock, Pomeroy, and several other parties of Elyria, also own and superintend vineyards of good size and quality, as do also a number of residents of the Point. Most of these are only in their third or fourth year, and bearing their first crop, but giving the finest promise for the future. All are of the Catawba variety, excepting a few vines of others for experiment; and the only apprehension is that the Catawba may here, as it has elsewhere, prove too unreliable, especially as the vines grow old and become deeply rooted in the moist clay soil. But for the present the vines and fruit are as healthy as can be desired, and the locality being so fully exposed to the lake influence, it is hoped will preserve them from disease as well as from untimely frosts.

After a delightful picnic dinner, furnished by the ladies of Elyria, and some time spent in speeches and social chat, the large company dispersed to their homes; but a small party made a tour of visitation to the vineyards along the shore, westward to Sandusky, while another party of a dozen members, including some of the *Ad interim* Committee of our Society, and a number of visitors from other States, made a tour of observation to the Islands.

At Black River, in Lorain county, the vineyard of the Messrs. Gilmore is deserving special notice for its extent and condition, and being largely of Iona and Delaware varieties, the vines are mostly in good condition and commencing to show fruit.

In the west part of Lorain county and east part of Erie, about Brownhelm, Berlin and Vermillion, are a number of good vineyards, most of them on the ridges of sandy or gravelly loam, and Isabella, Concord, Delaware, Iona, and other varieties of grapes, and generally succeeding well. On the clay lands near the shore, also are young vineyards of Catawba of quite promising appearance. At Vermillion we began to see the damage done to the grape crop by the storms that were so destructive on the Islands and around Sandusky. Several vineyards of Iona and Delaware varieties here are particularly flourishing. The Iona vineyard of the Messrs. Stevenson, at Clyde, is also deserving of mention, as it bore a large crop of fruit for three-year-old vines, as did also that of Z. Phillips & Son, at Berlin Hights.

At Kelley's Island, also on Put-in-Bay Island and the Peninsula, we found the vineyards generally in healthy condition of vine and foliage, but the fruit had mostly blighted and fallen off when quite small, from the effects of cold rain storms at the time of blossoming or soon after. Not more than about one-fourth of a fair average crop was remaining on the vines, and the bunches were generally defective. We found, however, that this misfortune did not discourage many of the vinyardists, as they still felt that the grape crop was, on the whole, more reliable and profitable than any of the ordinary farm crops of the country.

THE ANNUAL EXHIBITION of the Association was held in Painesville October 14th and 15th. There was a good attendance of members and some visitors from abroad. The display of grapes was very good for the season, embracing about 400 plates or samples, and 100 varieties. The number of entries was 120, a trifle less than the previous year, and the quality of the fruit, though generally fair, was not quite up to the standard of ripeness, owing to the very cool weather of the previous six weeks.

The most interesting feature of the exhibition was the large number and fine appearances of different varieties of Rogers' Hybrid grapes, including the Salem and a dozen or more sorts, grown by Mr. Knox, of Pittsburgh, and other parties. The premium for the best six bunches, quality to rule, was awarded for the Salem, presented by L. Oliphant, of Brocton, N. Y., (grown at Ithica, N. Y.) The premium for best ten varieties was awarded to Capt. J. Spalding, of Cleveland, also that for the best display of Rogers' Hybrids.

Among the new grapes were specimens of the Eumelan, Walter, Hine, Detroit and some others, but no new seedling, exhibited for the first time, was deemed worthy of notice.

The show of native wines was not as extensive as on some former occasions, and as this feature renders the exhibitions obnoxious to many good temperance people, the association has resolved to omit wines at future exhibitions.

Discussion was had, as usual, on grapes, especially new varieties, including the Salem and others of Rogers' Hybrids, most of the speakers giving strong testimony in favor of about a dozen of the numbers. Remarks were also made on the subject of giving *names* instead of *numbers* to these grapes, and a committee was appointed to correspond with Mr. Rogers and request him to furnish names to such of his grapes as are likely to be generally cultivated. E. F. Underhill, of Brocton, N. Y., was appointed chairman of the committee.

The reports from different parts of the Shore district showed that the season had been remarkably unfavorable for the ripening of Catawba and other late varieties, so that very little fruit of these sorts was found fit for market or for wine. Dr. Dunham and a few others, on dry clay soils and best localities, had most of the crop ripen sufficiently to sell, though the quality was not up to the usual standard, and a good deal of the fruit left on the vines for further ripening was damaged by frost, which came earlier than usual.

The annual meeting of the Association was held at Cleveland, Feb. 19 and 20. The attendance was larger and the discussions more spirited than had been anticipated, in view of the unfavorable season just past.

In the opening address president Dunham gave a summary of the proceedings of the Association for the past year, the results of the season, &c., and spoke of the need there was of further labor, experiment and research, before the various questions in regard to grapes and grape culture could be settled. He also alluded to the advantages of the meetings, discussions and excursions of the Association, and the necessity for their continuance. In the matter of marketing grapes he also made some suggestions looking to the reduction of the cost of transporting the fruit from the producers to the consumers, &c.

Mr. Bateham spoke of the different styles of grape boxes and crates as exhibited at Mr. Knox's grape show, the past fall, in competition for the $100 premium offered by Mr. Knox. [See a few pages onward in this report.] Some good boxes were exhibited at this meeting by Messrs. White & Co., of Cleveland, and S. Patterson, of Berlin Hights.

NAMING THE ROGERS GRAPES.—The report of the committee on this subject was read, giving the compliance of Mr. Rogers and a promise to furnish names for the most approved of his grapes, in a short time. The thanks of the Association were then tendered to Mr. R., and the Secretary was directed to request him to furnish the names in time for the annual report of the Association. To this Mr. Rogers afterwards responded, giving the following names for eleven of his best seedlings, making, with the *Salem*, a dozen. (The descriptions are by Mr. Rogers, as given in the *American Journal of Horticulture*):

Gœthe, No. 1.—Though this variety is perhaps more unique, and shows more of the character of the European species, than any of the other sorts, the vine is one of the hardiest, and very free from mildew. It produces large crops of beautiful clusters and berries, free from rot or imperfection of any kind. The bunch is large, shouldered; berry large; in shape long, oval, resembling the Malaga; of a yellowish-green toward the sun; skin thin; flesh tender and melting throughout, very sweet and delicious, with a pleasant and peculiar aroma. This variety is so late as seldom to ripen here, but as far south as Washington and St. Louis, is considered one of the most valuable.

Massasoit, No. 3.—Bunch of medium size, rather short, with shoulder; berry of medium size; color red; flesh tender and sweet, with a slight trace of the native flavor when fully ripe, though not so much as to be at all objectionable, but, on the contrary, rather pleasant. As it is very early, this is one of the most valuable for cultivation at the North.

Wilder, No. 4.—Bunch large and showy, so much resembling Black Hamburg as to be hardly distinguishable in appearance; berry globular, large; color black; flesh tender, with a slight pulp. The fruit ripens as early as, and frequently earlier than the Concord, and can be kept a long time. It has become the most popular of all, and is one of the most profitable for market purposes, its size and beauty being equaled by its vigor, hardiness and productiveness.

Lindley, No. 9.—This, together with all those numbered from 5 to 14 inclusive, was hybridized from the Chasselas; while the remaining numbers were fertilized with Black Hamburg. Vine of very vigorous growth, making rather long-jointed wood, but sometimes very fruitful. The foliage, when young, is of a reddish color. The bunch is long, compact: berries globular, reddish; flavor sweet. It resembles the Grizzly Frontignac in appearance of bunch and flavor, and has scarcely a trace of pulp. It ripens among the earliest.

Gœrtner, No. 14.—Bunch above medium size; berry from medium to large; skin thin; color light red, with a pleasant aromatic flavor. The vine is productive, and the fruit ripens early.

Agawam, No. 15.—This variety has been here considered the highest flavored of the series. Bunch large, somewhat loose, shouldered; berry large, globular; skin thick, of a brownish-red color, like the Catawba; flesh tender and juicy, free from tough pulp; flavor very rich and pleasant, having a peculiar aroma; thought by some to resemble the Black Hamburg. The vine is the most vigorous of all, and very productive; but in unfavorable seasons and soils, the fruit is somewhat inclined to rot.

Merrimack, No. 19.—The bunch is generally not as large as the majority of the black varieties; berry large, globular; skin black; flavor sweet and rich. Ripens early, and is of uniformly good quality even in unfavorable seasons; vine very vigorous, and a good bearer. This may be classed among our best early grapes.

Requa, No. 28.—Bunch large, shouldered; berry of medium size, roundish; skin thinner than most of the collection; color red; flesh tender and sweet, having in some seasons a trace of the native flavor.

Essex, No. 41.—Bunch of medium size, shouldered; berry somewhat flattened; in this respect resembling the native parent; flesh tender and sweet, with a high aromatic flavor, excelling on this point most of the black varieties. Ripens early.

Barry, No. 43.—Bunch rather short, broad and compact; berries roundish to oval, much like Black Hamburg in general appearance; flesh delicate, sweet, and tender; skin thin; color black. Ripens as early as Concord, and is one of the best black grapes. Vine very vigorous and productive.

Herbert, No. 44.—Bunch rather long and loose; berry of medium size, round, or sometimes oblate; flesh tender, sweet, and rich. Early and productive.

Salem, No. 53.—This was originally numbered 22 in my private collection; but, a spurious sort having been put into the market under that number, the number of this variety was changed to 53. The bunch is rather large and broad; berry inclining to oval in form; skin thin; color red; flesh tender, sweet and delicate. The flavor is, to my taste, superior to any of the others. In general appearance, the bunch strongly resembles the Black Hamburg; but it is as early as Concord. The vine is vigorous and productive; and, on the whole, it is one of the best.

CHANGING THE ASSOCIATION.

According to the proposition announced in the circular for the annual meeting, a motion was made for merging the Association into the Ohio State Horticultural Society; but this failed. Then a motion was made to change the name to that of Ohio Grape-Growers' Association; which was carried by a strong vote.

A motion to omit *Wines* at the future exhibitions of the Association, elicited considerable discussion, and was carried by nearly a unanimous vote. Several wine-makers favored the proposition.

The following are the officers elected for the ensuing year:

President—Dr. J. W. Dunham, of Collamer.
Vice President—George W. Campbell, of Delaware.
Secretary—M. B. Bateham, of Painesville.
Treasurer—Rev. R. H. Leonard, of Collamer.

Directors—Addison Kelley, of Kelley's Island; Col. D. C. Richmond, of Sandusky; J. Terrell, of Avon Point; Captain J. Spalding, of Cleveland; J. D. Clarke, of Lancaster; J. E. Mottier, of North East, Pennsylvania; Judge A. S. Moss, of Fredonia.

Reports on the Grape Crop of the past season were given from all sections of the Shore district, showing that, with the exception of the Islands and vicinity of Sandusky, all varieties had borne a good crop; but the remarkably cool autumn had prevented the ripening of the Catawbas, excepting in a few of the most favorable localities. As this variety makes up the bulk of the crop, the general result of the season was nearly a failure. Other varieties, as Concord, Delaware, Iona, and some of the Rogers' Hybrids, had done very well in most sections of the district, and it was thought there would be considerable planting of these varieties the coming spring, though the friends of the Catawba were not going to abandon their old favorite.

METEOROLOGY AND GRAPE-ROT.

On the invitation of the Association, Mr. G. C. Huntington, of Kelley's Island, read an essay giving the result of his observations on the effects of the weather in producing grape-rot. It was listened to with marked attention by the audience.

KNOX'S STRAWBERRY SHOW, AT PITTSBURGH, JUNE 30TH, 1868.

As the fame of Mr. Knox's fruit farm, and especially of his strawberries, becomes more widely extended, the attendance at his annual exhibitions very naturally increases; hence the number of persons present this season was greater than last year. The crop of fruit, although quite large, and exciting the wonder and admiration of spectators, especially of those who were present for the first time, was not quite equal to that of the previous season, owing in part to the dry autumn, preventing the full development of the plants, but more to the fact that on most of the beds the runners were allowed to grow for the production of young plants, to supply the demand it was foreseen would exist for them in the spring. But on portions of the ground where the runners were removed and usual culture bestowed the crop was fine as usual, the yield, size and beauty of the fruit, especially of the Jucunda and Fillmore varieties, being such as to lead most persons to conclude that all attainable perfection had been reached in the kinds and culture of strawberries.

Mr. Knox, however, belongs to the progressive school, and makes it his rule to *prove all things*, as well as hold on to that which is good. Hence we found on his exhibition table and his grounds about one hundred varieties of strawberries, including nearly all that are known of any repute, whether new or old, American and foreign. These are being tested in these grounds, where the soil and culture are so favorable for this fruit;

and of course the opportunity thus afforded for comparison and study is of great value to all who seek reliable knowledge.

As the result of his experience thus far, Mr. Knox's choice of varieties for market purposes is about in the following order: Jucunda, Fillmore, Triumph de Gand, Wilson, Golden-seeded, Agriculturist, Reed's Late Pine. The Wilson and Golden-seeded are the first to ripen, but Jucunda and Fillmore are far the most profitable. Reed's Late Pine is new as yet; it promises to be the best variety to come after the Jucunda.

NEW SEEDLINGS.—Mr. Knox has for several years devoted attention to raising new Seedling Strawberries; and a large bed of these, mainly from seeds of the Jucunda and Fillmore, was the most interesting sight of the whole exhibition to the connoisseur. Of several hundred plants or stools, the product in most cases was as remarkable for size, beauty and productiveness as that of the parent varieties—which is high commendation; while there was enough of diversity in foliage and habit of plant as well as in color, shape and quality of fruit, to afford the fullest chance for novelty and value. In any other place but this, the owner of such a bed of seedlings would be deemed quite sure of a fortune; but Mr. Knox having set his standard very high, did not seem to share in the enthusiasm of a majority of his visitors respecting them. He said he should not deem any new sorts worth disseminating that did not prove, after several years trial, superior to existing ones; and with the high excellence of some already known, this was not likely to be easily or often attained. Still he regarded some of the seedlings as of much promise and well deserving of further trial, while the majority would be at once rejected—most of them for want of quality in the fruit. And here it may be remarked, that the flavor of strawberries has not generally been as high as usual this year, owing to frequent showers and warm cloudy weather about the time of ripening; but the same causes increased the size and number of berries. So that the crop was larger, in most sections, than the meager growth of plants last fall led the owners to anticipate; and prices in the markets have ruled low, excepting for the early supplies and those of extra quality.

It is in this matter of *quality* of fruit, including size, beauty and perfection of handling, that Mr. Knox has thus far exceeded all other extensive growers, and is likely to do so for years to come; and yet he is of all men the most liberal in the way of making known his methods and improvements to others as is done at these annual gatherings at his grounds, and by means of the public press, &c.

The editor of the Pittsburgh Gazette thus winds up his account of the Strawberry Show:

"The display on the vines was admirable, but that of the different varieties, evidently not selected with any special care, upon the tables in an upper hall, was really magnificent. The peerless Jucunda—Knox's greatest triumph—there reigned at home, a queen in her own realm by birthright, regal in her blonde beauty. Next to her, the Fillmore, a brunette, as dark as if reared under a southern sun, served not as her rival but as her perfect foil, and up and down the tables were ranked and grouped and mixed some fifty others of the hundred or more varieties of the strawberry. All the old favorites were there, eclipsed by new and more brilliant rivals, but still honored with a rememberance of what they had been. The display was, taken altogether, such as no other one man in America could make, in the line of this specialty.

"Mr. Knox has nearly two hundred acres of land—an upland plateau of limestone-clay soil—devoted to the culture of small fruits and berries for the markets, and to their propagation to supply orders from every quarter of the country. He employs about a hundred work-people, of both sexes, old and young. He sends away hundreds of bushels of fruit daily to the most distant markets, having his own telegraph connection with the city, so that he can talk at any moment with his agents in the distant cities. * * * His fruit-farm comprises a world of instruction for the amateur or professional horticulturist, and will repay the visitor for the longest journey."

JUCUNDA AT CINCINNATI.—At the Strawberry Exhibition of the Cincinnati Horticultural Society, June, '68, the premium for the best dish, and also that for the largest or heaviest five berries, were both awarded for samples of the Jucunda, grown by Col. Anderson, the President of the Society; and the awarding committee, in their report, paid the highest compliment to the Jucunda, and expressed regrets at the absence of their old favorite varieties, and also that the Wilson had so generally monopolized the affections of the cultivators. An intelligent fruit-grower, sent by the Society as a delegate to Knox's Show, was so convinced of the superiority of the Jucunda, that he engaged a large stock of plants for next fall's planting, and, on his return, made a report giving his conviction that the Jucunda is the best of all known varieties for market purposes.

BERRY-BOXES AT KNOX'S SHOW.—The number of specimens of boxes and crates presented in the competition for the $100 premium offered by Mr. Knox, was quite large, embracing over a dozen different patterns: but it was found that several manufacturers had omitted to send specimens, and quite a number of those sent were without information as to price. It was also found that two distinct classes of boxes are demanded by growers, and furnished by manufacturers, viz., a cheap or gift box, to be sold or given away with the fruit, and a better and stronger article to be returned by the dealers or consumers; and as these could not be regarded as competing with each other, it was deemed best to divide the premium, and offer $50 for each class of boxes (with crates), the award to be deferred till the time of the grape show in October, when a like premium will be given for the best grape-box.

At the grape show, a number of additional specimens of berry boxes were presented for competition, along with a great variety of grape boxes. The awarding of the premium for the latter was deferred till next year. The premium for the best return berry box or basket was awarded to the Beecher Basket Company, of Westville, Conn., for their circular baskets, pints and quarts. (A basket of similar form, and lighter and neater, is now made by H. N. Peck & Co., at Rochester, N. Y.)

The premium for the gift box was awarded to A. T. Newell, of Warren, O., for a light and cheap square box with raised bottom. This also is similar to the Rochester square box, and to those now made at Berlin Hights, O., by the Berlin Box Company.

M. B. B.

KNOX'S GRAPE SHOW, OCTOBER, 1868.

The grape show at Mr. Knox's was a very interesting and instructive affair, but did not attract as many visitors as the strawberry show. Those persons who are most interested in grape culture are generally too busy taking care of their own fruit to find time to attend many exhibitions at this season. We found the crop here quite full—many vines, indeed, too full for perfect ripening—but most kinds were in fine condition. The Concord of course takes the lead among grapes here, as the Jucunda among strawberries.

Seventy varieties of grapes were exhibited on the tables. Of these, about one-third were different numbers of Rogers' Hybrids, constituting the largest display of these I have ever seen; and their quality was such, on the whole, as to improve the impressions I had previously had of these grapes. (See last year's report of this Society for notes on these and other varieties.) It was remarked, however, by all spectators, here as elsewhere, that many of these varieties resemble each other so closely as hardly to deserve separate names. In another year or two we shall begin to know which of them are most deserving of culture. Mr. Knox is of the opinion that several of them will prove quite valuable as market varieties, but enough is not yet known of the productiveness and habits of the vines.

The Creveling, as mentioned last year, succeeds remarkably well with Mr. Knox—the bunches being of better form than can often be found elsewhere. The Ives, too, is quite a favorite with Mr. K., as he finds it profitable as an early market grape, though I think it inferior to the Hartford for this purpose. The Delaware and Iona vines had done quite well until the last of the season, when the leaves failed somewhat, so as to prevent perfect ripening, especially where overloaded with fruit. The Salem and Martha ripened a fine crop, and are regarded as highly promising varieties; but it is to be hoped we shall yet have better white grapes than the Martha, equal to it in hardiness and vigor of vine. Who has got the coming white grape?

M. B. B.

MEETING AT CLEVELAND, JULY, 1868.

NAOMI AND OTHER RASPBERRIES—CHERRIES, ETC.

The *ad interim* committee of the Society held a two-days' meeting in Cleveland and its vicinity for the inspection of raspberries and late cherries, especially to look after the *Naomi* raspberries, respecting which the public had formed high expectations from the descriptions which had been given by Mr. Elliott through the horticultural journals, and the report of the Department of Agriculture.

Public invitation having been given for persons having new or choice varieties of these fruits to present samples to the committee, several lots of the Naomi raspberry, so-called, were presented, with others, at the hotel, and Mr. Campbell, of Delaware, a member of the committee, brought a good plate of the Clarke variety. The other members of the committee present were Dr. Warder, Col. Richmond, N. L. Wood, N. Ohmer and M. B. Bateham. A number of fruit growers of the vicinity of Cleveland were with the committee.

The first half day was spent in a number of the best gardens in the city, where they found quite a number of varieties of raspberries and other fruits, as well as the finest flowers, etc., under the most favorable circumstances as to soil and culture. At Gen. Stager's, on Euclid street, and the grounds of the Messrs. Wades, adjoining, were fine beds of raspberries, including Orange, R. Antwerp, Hornet and *Franconia* or *Naomi*. This last was bought as "Antwerp" from a nurseryman in the vicinity, but was found to be distinct from Red Antwerp, and the fruit was so nearly like, if not identical with the samples of Naomi shown to the committee, that a number of the party believed them to be the same, while others called it Franconia. The plants had always been protected by bending down and covering the tops, like those of the other sorts, so that no test as to the hardiness of the plants had been made.

Next morning the party, numbering over a dozen, went to Rockport to visit the grounds of Mrs. Gov. Wood, where the Naomi originated, and of Mr. Merwin, who had disseminated the plants.

Mrs. Wood having been absent in California for several years, the grounds are in the hands of a tenant, who has not given much attention to the fruits; and we found the rows called Naomi evidently a good deal mixed, though some, of more recent planting, seemed to be nearly pure and agreeing with the samples that had been presented to us in the city. On the grounds of Mr. Merwin the plants had been allowed to grow too thickly, with little cultivation, and a majority of them appeared to be of a spurious and inferior sort; which seemed to account for the reports that had been made from a distance adverse to the merits of the Naomi.

The variety named *Mrs. Wood*, seen at both these places, is quite late, as described, and was not in condition to be inspected. It is evidently of the Black-cap class, or a hybrid from it, as claimed, the plants propagating by rooting at the tips.

At Dr. Kirtland's the party made a brief visit in passing, the good old Doctor bidding them a hearty welcome, but regretting that he had nothing in the fruit line worth showing since the rot had caused a complete failure of his cherry crop, and the blight had made such havoc of his pear trees that he had ceased to pay any attention to them. We found, however, a few good cherries on trees of the Osceola and one or two other late varieties, and a fair crop on a tree of Louis Phillippe, one of the largest and best of Morellos.

The party did not stop at Mr. Elliott's, having learned to their regret that he would be unable to see them, owing to the dangerous illness of his daughter. One of their number, however, called and obtained specimens of several varieties of his raspberries for the purpose of comparison.

At Captain Spalding's a halt was of course made to take a look at the vineyards, as these and some rows of dwarf pear trees are the Captain's special pride—though for the season he was compelled to neglect even these, as he was the principal contractor for building the railroad from Cleveland to Rocky River, which was just being completed.

At S. B. Marshall's new place we found some very fruitful beds of raspberries and other fruits, planted a year ago last spring. The Doolittle Black-cap was ripening a very profuse crop of large berries, and a variety purchased as Miami Black-cap (Mammoth Cluster?) was showing the same character for productiveness, but a week or ten days later some Franconia, Fastolf and Hornet were also bearing well, and blackberries, gooseberries and currants the same.

Returning to the city in the evening, the committee found they were not yet able to decide the main point of their investigation, nor the identity of the Naomi; hence it was determined to devote another half day to the work and visit the grounds of the gentlemen at Collamer, who claimed to have the Naomi fruiting plentifully. A majority of the committee were not clear in regard to the means of distinguishing the Naomi from the Franconia; but believed that on comparison of the fruit, leaves and canes there was a slight difference; and on inspection it was their belief that the beds of Mr. Hall, at Collamer, were the true Naomi, and unmixed, the same as the best of those on Mrs. Wood's grounds, and also at Mr. Elliott's; they were also highly pleased with the evidence there given of the productiveness as well as beauty and excellence of the fruit, and expressed the belief that the firmness of the berries was such as to render it better fitted for transportation than any other variety of equal excellence, while in regard to the hardiness of the plants, the testimony of all who have long known the variety is, that no injury has ever been known to result from the winter.

The Franconia, which is supposed to have been the parent of the Naomi, has not been very generally known in Ohio, and has been regarded as needing winter protection. The committee did not find any person who claimed to have grown the two side by side, though Mr. Elliott has since stated that he has them both in his grounds, and that the Naomi is distinct. He says:

"My observation of Naomi induces me to think it sprung from Franconia. The cane is somewhat like the Franconia, not quite as strong or stout, and for many years has proved, here on the lake shore perfectly hardy even to the tops. The fruit is about the same size as the Franconia, a little more conical, grains not quite as large, equally or perhaps *more firm*, not quite as acid, *but richer and of better flavor*."

In order to submit the fruit to the severest test and scrutiny, at the suggestion of the committee, Mr. Hall put up some boxes of it, in the usual way, and sent them by express to prominent horticulturists, in Boston, New York, Philadelphia, Rochester, Pittsburgh, and Cincinnati, during the hot weather of last July; and the letters received in return show that in each case the fruit arrived in prime condition, the appearance and flavor exciting the admiration of all. These letters are from Marshall P. Wilder, P. Barry, Thomas Meehan, J. Knox, and others. Not one of these hint at the belief that it was the Franconia variety.

Of the older varieties the committee would commend the *Hornet* as a very excellent and productive raspberry, deserving of trial by amateurs who are willing to give the plants a little protection in winter. The *Philadelphia* is a hardy and productive sort but the fruit not very good nor handsome, hence ought to be superceded by better. The *Kirtland* is of better color and quality than the Philadelphia, but the plants not quite so vigorous or productive. The question as to which is the true Kirtland, the committee are not able to decide, there being several varieties of the class with very slight shades of difference between them and these often affected by soil and culture.

In regard to the *Mrs. Wood* the committee expressed no opinion as to the quality, not having seen the fruit in condition; it is hardy and productive, the lateness of its time of ripening will give it value with most persons.

Lum's Autumn Bearing has several times been before the committee, and some of its members have seen it in bearing; they have no doubt of its excellence and productiveness as one of its class, and following after the Mrs. Wood, will carry the season of raspberries quite through the summer and fall. The *Griggs* variety of the same class is thought by Mr. Campbell and some others to give promise of value; but more time wanted to settle the point fully.

The cause of the failure of the cherry crop was the subject of a good deal of inquiry and discussion by the committee, but nothing was elicited on the subject worthy of publication. The planting of more of the finer sorts of Morellos and Dukes, such as the Late Duke, Louis Phillipe and Belle Magnifique, is recommended.

M. B. B.

NEW FRUITS AT THE OHIO STATE FAIR.

A meeting of the State Horticultural committee was held at the Court House in Toledo, on Wednesday evening, for the purpose of examining the specimens of fruit presented at the State Fair as new or seedling varieties, quite a number of which were on the tables.

A plate of fine-looking pears, from B. J. Smith, of Put-in-Bay Island, presented as "Commodore Perry," a new variety, were believed to be Flemish Beauty, but remarkably large specimens, and not ripe.

Seedling peaches, by J. C. Smith, of Erie county, quite large and fair looking, resembling closely the Heath Free, but not quite the same; quality fair, but not first-rate.

Seedling peach "Lincoln," by Wm. Hickox, of Hillsdale, Mich., large, handsome, yellow-fleshed, resembling Smock Free—perhaps the same.

Peach, by P. Bohlander, of Dayton, cling-stone, medium size, handsome, yellow and red, resembling Orange Cling, but not as large, and thought to be of finer texture and flavor; may prove the same, or a seedling of it.

Another by the same person, fine mottled color, smallish size. Was believed to be Columbia, or a seedling of it.

Seedling peach, by J. H. W. Mumma, large, round, fair-looking, late—not ripe enough to judge of its merit.

Several apples, presented as new varieties, were either found to be old or not of sufficient merit to deserve name or mention. A large and fair looking apple, presented by Mr. Powers from Mr. Dervese, of Perrysburg, who calls it Belleflower, was pronounced not that variety, and not equal to it in quality; name not known. The Mother apple, presented by Mr. Mumma, of Dayton, was tasted and found of excellent quality for table, deserving to be more generally known and cultivated. The *Powers* apple, so named by the committee two years ago, was presented at the Fair by Mr. Powers, and obtained the premium as the best new seedling variety.

GRAPES.—Two samples, presented as new varieties, grown in the vicinity of Toledo, were found to be only Isabella, or seedlings of it, presenting no improvement on the parent variety.

"White Diana," presented by W. Z. Barney, of Sandusky, a seedling by Mr. Hopkins of Lorain county; specimens not quite ripe or in condition to be judged; skin too tough for a good table grape, but having high flavor, it may be good for wine.

"Eumelan," from Dr. C. W. Grant, N. Y., a new black grape, said to be of superior merit, but the specimens having been carried from New York to the Michigan State Fair and back, were somewhat musty and unfit to be tested. The appearance and texture of this grape are very fine; and as the public are now appreciating the judgment of Dr. Grant in reference to the Delaware, Iona and Israella, they will be willing to accept his testimony in favor of the Eumelan.

A box of Iona grapes, presented by M. A. Stevenson, was passed around and freely tasted by the company, till all were ready to vote the Iona a premium as the best of all the new class of grapes.

Fall-bearing raspberries, presented by Mr. Miller, of Clinton county; of the Black-cap family; berries thought to be larger than the old Ohio Everbearing, and the plants said to be more productive.

MEXICAN STRAWBERRY.—A fall-bearing strawberry, called "Maximilian," said to be something new from Mexico, was exhibited for the sale of plants at the Fruit Hall. The committee were unanimous in pronouncing it nothing materially different from the old Monthly Red Alpine, of no practical value whatever; though agents are now canvassing the country and obtaining subscriptions for the plants, at a high price, as a new and valuable variety.

NEW METHOD OF PRESERVING FRUITS.—Mr. Boalt, of Norwalk, served up for dessert a dish of strawberries preserved by a newly patented process, which promises to revolutionize the business of canning or preserving fresh fruits. The sample tasted at the dinner, and other kinds on exhibition in the hall, impressed the committee very favorably. (See remarks at annual meeting.)

M. B. B.

ANNUAL MEETING OF THE SOCIETY

At Columbus, December 9th and 10th, 1868.

The attendance of members at this meeting was quite good, though severely cold weather prevented many coming from distant parts, and also the bringing of fruits for exhibition.

President Warder called the meeting to order at 11 A. M., and appointed the following committees:

On Business and Resolutions—A. B. Buttles, F. Pentland G. Boalt, and N. L. Wood.

On Delegates and Members—J. D. Clarke, N. Ohmer and D. C. Richmond.

On Fruits—F. R. Elliott, N. L. Wood, L. Weltz, J. Storrs and G. W. Campbell.

On Vegetables—D. C. Richmond, A. B. Buttles and H. Gulick.

Committee on Furtherance of the Objects of the Society—F. R. Elliott, J. D. Clarke, John Spaulding, N. Ohmer, F. Pentland and Jacob Kemp.

Adjourned till 2 P. M., to give time for arrangement of fruits and vegetables on the tables. There was a very fair display of apples, Col. Richmond, of Sandusky, having a very large collection, and a number of members smaller lots, as will be mentioned hereafter. There was also a great display of *potatoes*. See report of committee.

At 2 P. M., President Warder delivered the Annual Address as follows:

ANNUAL ADDRESS OF DR. WARDER.

Fellow Citizens: In again rising to address and to bid you welcome to this annual gathering of those who are most deeply interested in the beautiful offerings of Flora, and in the luscious and most welcome fruits offered to us by Pomona, I feel that while to some of you this address may seem like an oft-repeated tale, I am really speaking to a new audience, since we are, indeed, a new organization—though I see before me many who for long years have worked together in the same cause, yet in our capacity as a society we did not extend our labors so widely as is now proposed to do. We have, indeed, made a change of front, inasmuch as we have extended our area of usefulness; and while our organization may thus be the means of doing more good to the Commonwealth in which we have the happiness and good fortune to reside, we trust that our membership may also be very much increased, and that, with this increase in the numbers of our fellow-laborers, we shall find an increase also in the active, energetic, useful working devotees to the cause, and a proportionate increase in the valuable results attained. By extending our active attentions from the limits of the orchard, the vineyard and the fruit garden, to the wider domain of the vegetable garden, the truck patch and the field, and while we also take cognizance of the forest-plantation, the landscape adornments, the beautiful floral parterres and the luxurious glass structures of our winter gardens, we shall, indeed, find that we have entered a most extensive field, the interesting objects of which will require years for their thorough investigation.

We need not feel oppressed with the vast amount of work, however, since we anticipate a corresponding increase of laborers, all of whom will have their special departments, which they will work up for the benefit of the whole, and by a division of the labor we shall at length be able to master all the various problems that may be presented. To this desirable end your assistance is earnestly solicited. Every member is urged to bring his friends and neighbors into communication with us. New blood, new heads and new hands are needed in this work to support, assist and relieve those few who have so long borne the burdens, and who would now gladly withdraw from active duty in favor of others who may prove more worthy and more useful. The older members do not desire to desert you, nor to shrink from responsibilities that have become almost a second nature to some of them; but while they receive your aid and participation in active duty, they will continue to render their sympathy in the exercise of the extended responsibilities of the Society.

To you who must be familiar with the facts it is almost a work of supererogation to point out and reiterate the delights and the great advantages that result from the pursuit of horticulture; and yet some of the arguments in behalf of our pursuit, and its claims upon the attention of the public, will bear at least an annual repetition.

Passing by the pleasures afforded by the conservatory, the flower garden, the lawn, and by the charming effects of the labors of the landscapist, if we confine ourselves to the more tangible, useful results furnished by the orchard, the vineyard, the fruit garden and the vegetable grounds, we may present a few arguments to the general public that will be worthy of their attention.

First among them is the important fact that these products contribute largely, not only to the food of our families, but, by the kind of food, they add to our health also. It is a well-established axiom in the medical profession that the regular consumption of vegetables and of fresh, well-ripened fruit, is conducive to the health of the consumers. It has been said by very high authority (Dr. Flint, of the United States Sanitary Commission), that the farmers of our nation are not as well fed as the town people. This may be an unwelcome statement to us who boast of our agricultural products, which make us realize the poetry of a land flowing with milk and honey; but let us calmly examine the position, and we shall see that, with all our plenty, the statement is correct.

Visit with me the farmers' tables, and then call upon the mechanic in our towns and cities, and we shall find a greater variety of food upon the tables of the latter, who have easy access to the green grocers' shambles, while too often the farmer has to rely on his meat-house, well stored with pork and bacon; on his meal sack, on the flour barrel, and on the products of a very mean garden, or only a poor truck patch in the corner of a field, for his supplies. This ought not so to be. Our farmers may enjoy the greatest profusion of fresh vegetables, and a succession of ripe fruits the year round, if they will but take the trouble to plant and cultivate even a small portion of their land as a garden and orchard. It will be a very important duty of the members of this Society to aid their neighbors in bringing about so desirable a consummation. This may be done by communicating practical information to the people, and by the dissemination of seeds and plants among them. Fear not even to give of your abundance of these things, when you can not persuade your neighbors to purchase them; for when the taste is once established, the most backward will often become the most liberal purchasers of future years. The argument derived from the pleasures attendant upon the cultivation of these articles and especially those derived from the gathering of the fruits and flowers of our own tending, might be presented, but will be left for each one of you to supply, as every one of you, I am sure, can do from your own happy experience.

But there is another, though meaner, appeal, to be made to the public on behalf of the productions of the garden, the truck patch and the fruit grounds; that is, the sordid motives of money-making. "Will it pay?" is a favorite expression with our people; a very proper inquiry it is, too, which may be answered by saying, that no crop taken from our soil yields so great profits. The productiveness of small pieces of land appropriated to the culture of fruits and vegetables is truly wonderful, and the money results from well-cultivated gardens is often astonishing.

You are all familiar with the excellent and most practical work of Peter Henderson, "Gardening for Profit," which should be in the hands of every one who plants a cabbage patch.

This then must be one of the things that will be incumbent upon us to do. Having put ourselves in the way of improvement in horticulture, it will become our duty, and should be our pleasure, to communicate to those around us the results of our observations and experience, that they too may enjoy the happy fruits.

I am not desirous of occupying a large share of your time, upon this occasion, by making any suggestion as to the course that will be best to pursue in that sort of reorganization which may be required to adapt our

Society to its extended field of operations; it may confidently be anticipated that the members in attendance, and the delegates from local societies that are here with us at this meeting, will be abundantly capable of making the necessary changes in our mode of working, and I should much rather leave the matter with a committee who can digest the subject and report at a session of this or a future meeting.

Without saying anything definite for your guidance in the reorganization of our Society, I must remind you that some modifications of our accustomed course of action may become necessary in order to render the Society useful to the horticulture of the State. By a proper system of delegates from various local organizations, who should report to this as a central bureau, a concentration of the observations of all might be eliminated which would be of great value. The subject is left for your consideration.

RETROSPECT OF THE SEASON.

The season through which we have just passed has been favorable for most of our horticultural productions in different parts of the State, excepting with fruits—among them the grape, which has not ripened so well as last year on the lake shore, and has suffered from mildew in other places. This latter difficulty we hope to be able to obviate by the use of such materials as are obnoxious to the spread and growth of fungous plants: sulphur stands at the head of these. The apple crop was a very general failure in large portions of the State, which has been a sad loss to thousands of our people, who depend upon this excellent fruit for a large share of their domestic supplies. In a part of the same regions the peaches were abundant and fine, while the cherry and the plum proved a perfect failure almost everywhere.

These several fruits were variously affected by the same climatic conditions, because they were in a different condition at the time of their occurrence; the folded buds escaped in some, and suffered in other kinds of fruits, while the opening and expanded flowers suffered, where they were caught by the sleet and frost, and enveloped in masses of crystal ice.

INSECTS.

These destructive little creatures continue to commit their extensive ravages upon the products of the farm and garden, and are cause of great losses to us. What are we doing to rid ourselves from their attacks, or to learn how to counterwork them? It is feared that we must answer little, very little.

Our earnest appeals to the Legislature, supported, as they were, by the approval of the Board of Agriculture, and sustained by numerous petitions, signed by the very best citizens in almost every county in the

State, have been reported against by the Agricultural committee of the House, who asked to be relieved from further consideration of the subject, until they were cornered, and, when nearly overwhelmed by the flood of petitions, they acknowledged that there did appear to be something in the matter, and that it was worthy of consideration, but that retrenchment was necessary, and they were committed to economy. There the matter rests, and is likely to rest. In the Senate our appeal was more kindly received, and a bill was introduced for the establishment of the office of State Entomologist, but the final action was not reached, and we may consider our efforts a failure.

In the meantime, other Western States have established this office, and we may hope to derive great benefit from the reports of such energetic men as Walsh, of Illinois, and Riley, of Missouri. These gentlemen are also engaged in the publication of a periodical, devoted to the subject of practical entomology, which promises to be of very great value to us. Your attention is directed especially to this periodical, which is furnished at the very moderate price of one dollar a year.

We may feel encouraged, also, to believe that a growing interest is taken in the subject by many of the people, and that, therefore, a degree of intelligence exists where formerly profound and hopeless ignorance prevailed.

It affords me pleasure to announce the receipt of a suit of twenty-four engravings of insects injurious to the cotton and other crops of the South. They were made by that sterling and indefatigable naturalist, Townsend Glover, who was sent to the Southern States for the special object of investigating those pests. When there he thoroughly studied the insects, and with his own hands executed these drawings from the natural objects before him. They are of deep interest to us, because several of them are not confined to ravaging the cotton fields, but attack the plants of our region also. With a modesty characteristic of genius, Mr. Glover reiterates the request that these plates shall be considered the gift of the Department of Agriculture to our Society, and not his private donation. The parcel is now presented for your inspection, and their future custody is subject to your disposition. I will only suggest that they be suitably acknowledged, and that a proper case be provided for their safe preservation.

POTATO CULTURE.

The potato plant has attracted great attention within a few years, first from its immense value to the nation as an esculent root, used also to a considerable extent in the arts. The total value in 1860 was $55,000,000 It has next excited the deepest interest on account of the serious losses which have been sustained in different parts of the world, by the disease known as the potato rot, which at one time threatened to depopulate Ireland by famine. Having invaded our own country, the excellent Chauncy Goodrich endeavored to produce a new race of plants, by importing seeds from South America, from which he has originated very many varieties. Some of them are now proving the wisdom of his efforts to produce a new and healthy race.

It is understood that one of our members will lay before this Society his plan for extending to this plant a degree of high and careful culture, and a favorable reception of his proposals is respectfully asked for at your hands, as they will require your active co-operation in the field.

The following is a table of agricultural products and their average values, compiled from the census report of 1860:

Potatoes, 110,000,000 bushels, at 50 cents per bushel		$55,000,000
Corn, 830,000,000 bushels, at 50 cents per bushel		415,000,000
Wheat, 171,000,000 bushels, at $2 00 per bushel		342,000,000
Wheat, 171,000,000 bushels, at 1.00 "		171,000,000
Cotton, 2,079,000,000 pounds, at 10 cents per pound		208,000,000
Wool, 60,000,000 pounds, at 50 cents per pound		30,000,000
Orchard products	$19,000,000	
Market gardens	15,000,000	
		34,000,000

It appears that the potato crop exceeds the other horticultural products, while they in turn are shown to be worth more than the wool crop.

INDUSTRIAL EDUCATION.

The horticulturists of our country have ever taken a lively interest in this concern, and in some of the States they have been among the most prominent of its friends and supporters. Our own Society, at its previous sessions, has shown that it appreciated the noble efforts that have been made for the elevation of the laborer by giving him the aid of applied science. Our State is in possession of a noble fund, sacred to tuition in "such branches of learning as are related to agriculture and the mechanic arts." The Legislature has appointed a commission to receive proposals, to inspect sites, and to report, so that we are in a fair way of having a location made during the current winter.

It will next remain for the trustees who may be appointed, to decide upon a plan and a course of study. Let us hope that they who are to have this important matter in hand, will be able to execute the trust so as to accomplish the greatest possible amount of good in the best way, and to the intended objects. Who are to constitute the objects of instruction? let us ask, as the way of imparting instruction will very much depend upon the character of the classes.

In a land that is so blessed as ours, with a noble system of common schools in successful operation, with its high schools, with academies and colleges to take up the advanced pupils who desire further to pursue their classical studies, surely there can be no possible excuse for degrading the proposed institution to the level of a common school for children, nor even to that of an academy. Such a course would be departing from the intention of Congress, who passed the bill making these noble grants of the public domain for the express purpose of satisfying the demand for what is known as practical education; in other words, for schools of applied science, for what we in the West have asked as industrial education.

Let us in Ohio avoid the errors of some of our neighbors, and, confining ourselves to the distinct meaning of the law, let us establish an industrial university, which shall be open to all of either sex, who may choose to come and matriculate as students, in order to receive the benefits of the instruction that shall be imparted. There should be no limit of age above eighteen, no restriction on account of qualification. A certificate of good moral character, with the matriculation fee, should open the halls to all applicants for one or more sessions of the university, or for one or more of the sub-divisions of the course of study that may be adopted.

Next let us consider the way or mode of imparting instruction, which will be of the greatest practical value to these objects, the pupils. In my own mind there can be but one answer to the question as to how this is to be done. Oral lectures, with appropriate illustrations; examinations of the pupils upon the subject of previous lectures, and discussions between the members of the classes, and with the professors, it appears to me, will furnish the true solution of the problem. The lecturer brings his subject directly before his class; he presents its most salient and important points, and with his own personal experience of the difficulties, he impresses upon his hearers those points of greatest importance. The class is thus enabled to study the subject, and prepare for the examinations of the next meeting. It is premature for us to attempt even the indication of the course of study; but we should jealously watch those to whom that duty may be committed, and hold them to a strict accountability for any departure from what is plainly set forth in the law as mandatory.

CONCLUSION.

In conclusion, allow me to thank you for the high consideration with which my worthy fellow members have ever treated him whom they have so long continued to keep in the President's chair. He has appreciated your intended kindness, and he is very sensible that without your cordial co-operation, and that of his associate officers, he alone could never have brought our Society to the proud position it now occupies among similar organizations of the country.

o preside over the Ohio Horticultural Society, is felt to be no small honor; but, my friends, you must not be partial. You have many worthy members from whose ranks you may select a more energetic and deserving captain, who will lead you to new fields of conflict with open and hidden foes, from which you shall return victorious, to lay your treasures of gathered knowledge and experience at future annual meetings, while your long-time friend will gladly again resume his former humble position in your ranks—a simple but earnest worker, as hitherto. Again thanking you for your long-continued kindness, I will yield to you and your committees, and carry on the discussions which are to occupy and instruct the Society at this meeting.

Reports of the *Ad Interim* committee came next in order, and Dr. Warder read his notes on apples, etc., as given in the first pages of this report.

Secretary Bateham gave a brief report of the meetings of the committee at Cleveland and Toledo; also of the doings of the Lake Shore Grape Growers' Association; these, also, are embodied in preceding pages of this report.

The report of the committee on apple orchards (appointed last year) was then called for, and the chairman of that committee, J. Storrs, of Painesville, read the following:

REPORT ON THE APPLE ORCHARDS OF OHIO.

Mr. President and Gentlemen: Very frequently in our discussions on apples in the meetings of this Society it has been asserted that some varieties were not as productive as formerly, and that many orchards were showing symptoms of premature decay. Assuming this to be a matter of fact, at the last meeting of the Society, at Sandusky, the following questions were submitted to a committee, with a request that they make investigation and report at this meeting:

1st. Can the unfruitfulness and premature decay of the apple orchards of Ohio be attributed to mismanagement in the transplanting, culture, and training of the trees?

2d. Or to the deterioration of the soil, in consequence of continual cropping?

3d. Or to climatic changes, in consequence of the clearing away of extensive forests?

4th. Or can the failure be charged to the increased depredations of insects?

The committee consisted of four gentlemen, and to each was given one of these questions, with the hope and expectation that each branch of the inquiry would be carefully investigated and a full report made at this meeting; but we exceedingly regret to find that two of the committee were unable to comply with your request, and consequently our report is not as full as it otherwise would have been.

Before examining those questions in order, it is natural for us to inquire: What is the natural age of the apple tree? not in its wild, uncultivated state, but as we now find it in fertile soils and favorable situations, with good treatment?

Although with the same care some varieties will live longer than others, yet, from the best data that we have, we may say that fifty years is a fair estimate of the durability of apple orchards.

Downing says in its wild state the apple tree is very long-lived, but the finest garden sorts usually live about fifty or eighty years, though by proper care they may be kept healthy and productive much longer.

On the sandy and gravelly ridges in Northern Ohio we find some of the oldest orchards have been planted sixty years, and are yet producing fair moderate crops.

In view of such facts as we have been able to gather, we will say that if an apple orchard does not live at least fifty years, it dies prematurely.

SOIL AND PREPARATION.

Before answering the first question proposed, we will here say that premature decay and unfruitfulness is often induced by a lack of preparation of the soil.

Mr. Downing says the apple will grow on a great variety of soils, but deep strong gravelly, marly, or clayey loam, or a strong sandy loam on a gravelly subsoil, produces the greatest crops and the highest flavored fruit, as well as the utmost longevity of the trees; an opinion in which we think every careful observer will coincide; and also, if the soil is not naturally dry with a good drainage, it must be made so by underdraining and deep plowing or it is unfit for an orchard.

Planting in wet, compact, undrained soils, where, at least a portion of the year, the roots are immersed in water, will be followed by disease, premature decay, and death.

The future value and success of the orchard depends very much upon the selection of suitable varieties adapted to the soil and climate of the locality where the trees are planted. Although the apple may be found growing luxuriantly in almost all soils and situations in our wide extended country, yet, as Dr. Warder very truthfully remarks in his work on pomology, there are varieties that appear peculiarly adapted by their nature to all these different situations; there are, perhaps, none that will thrive equally well in all. The orchardists of each section of the country must ascertain for themselves what varieties are best adapted to the peculiarities of their soil and climate; hence no one region can furnish lists of varieties to be taken as a guide of others differently situated.

CHOICE OF VARIETIES.

In our own examination of orchards we find almost everywhere the evidence of the lack of knowledge and discrimination in the selection of suitable varieties adapted to the soil and location of the orchard; hence, after a few years, having exhausted the scanty food found in the soil suited to their wants, or struggling in vain to adapt themselves to a congenial climate, they cease to become profitable to their owners, and can only be regarded as cumberers of the ground; while in the same orchard may be found other varieties that seem perfectly at home, and are rewarding their owners with bounteous crops from year to year.

These facts present themselves at the very threshhold of our inquiry, as one of the prominent causes of "failure and premature decay." And we will here say that, though the early planters may be pardoned for their mistakes, there is no longer any excuse, for he that "runneth may read" enough to keep himself posted, and if he plants wrong varieties he can only blame himself for his ignorance.

FORM OF TREES.

We also find that planters not only make mistakes in their choice of varieties, but also in their choice of trees, as to form and size. It is a common error for the purchaser to choose the largest and oldest trees, without much regard to form; as though the more wood was obtained the better the purchase; not thinking that the larger the tree the more it will be mutilated in the lifting in the nursery, and the greater the shock to the whole system in its removal. Such trees, when standing in the crowded nursery rows, are usually tall, with high heads, and when planted in the orchard have tall naked stems of the "fish pole pattern," with nothing to protect them from the scorching rays of the sun or sudden thawing in winter; the consequence is, that, although such trees may be protected from the sun and properly supported to keep them in an upright position till they can take care of themselves, yet it is seldom properly done; and we everywhere see trees influenced by the prevailing winds, leaning to the east or northeast, leaving the southwest side exposed to direct rays of the sun. The results are seen in the blackened surface, loosened bark, and a host of insects preying upon the decaying wood.

REMEDY.

Select two or three year old trees from the nursery, with low heads and stocky trunks; and, after planting, keep them in an upright position till well established.

Another fault may here be noticed, and especially in almost all the old orchards, *too close planting.* For vigorous health and the beautiful development of all its parts, the apple tree often needs the space that is denied it. Young planters can learn to avoid this and most other errors by becoming members of our Horticultural Society.

The practice of digging *holes* in unbroken sod or in close, compact soils, should be everywhere condemned. When the country was new, the soil was porous and filled with plant-food—the accumulated wealth of ages. A tree planted in that virgin soil could readily extend its roots in every direction, and find abundance of the aliment that it needed for its future growth and fruitfulness. But the times have sadly changed. The cultivator of the soil, to supply his necessities, or in his eagerness to become rich, has taken away largely the elements of fertility, and given back but very little.

DEEP PLOWING AND DRAINAGE.

Continual cropping has not only carried away the plant-food—the lime, potash and soda—but has greatly altered the physical structure of the soil. Instead of its porous, friable character, admitting the escape of superfluous moisture, and the ready entrance of the atmosphere to restore it back when most needed in time of drouth, we find in all aluminous soils and heavy loams, and especially when there is a clayey subsoil, that the tillable portion becomes compact, and often, in time of drouth, very hard. The natural drainage by evaporation is greatly impeded, so that superfluous water escapes very slowly by evaporation, and when it is finally dried up the air cannot enter as formerly; the thousand pores are closed, and consequently such soils suffer both by excessive moisture and extreme drouth.

From the examination your committee have been able to give to this part of the subject, we have come to the conclusion that orchards planted on clayey soils have suffered far more in consequence of the changes already referred to than those planted upon sandy or gravelly soils; and to us the reason is obvious. On our sandy and gravelly ridges, particularly in northern Ohio, the physical condition of the soil is less changed from its primitive state. Although, like other soils, its fertility has been diminished, yet the surface is still open to the benign influence of the atmosphere, and the drainage is now, as formerly, complete. Such soils are more moist than clay, and consequently orchards planted in such places never suffer from extreme drouth or excessive moisture, and with proper care will remain healthy to a good old age.

So vigorous and healthy in general are the orchards on the ridges in Lake county, that, in a letter to the chairman of this committee, that excellent pomologist and careful observer, Dr. Beardslee, of Painesville, wrote that he knew of no orchard, that was well cared for, that exhibited symptoms of premature decay.

We find that on clay lands contiguous to the ridges, orchards planted at the same time, with as good cultivation, are inferior in size and productiveness, suffering more both in wet and dry seasons; and yet a careful analysis of the soils would probably show that the elements of fertility existed in greater quantity in the clay. If this theory is found to be correct, as we believe it is, it shows the importance of thorough underdraining and deep plowing in all compact soils, in preparing the ground for new orchards.

BAD PRUNING.

One of the causes of premature decay may be seen everywhere in the manner in which old orchards were *pruned*, or rather, maimed, crippled, mutilated and slaughtered. Instead of thinning out the branches annually, by cutting out such small ones as were crossing or might chafe each other, preserving the symmetry of the head and keeping it low, the orchard for many years was usually neglected, till the branches became large and the head thick and compact, and then the slashing process commenced. One principal thought seems to possess the animal that weilds the axe (if he can be said to have any thoughts), that the tree is *in the way*, the right whereof belongs to himself, his team and his plowman. Hence the lower branches are the especial objects of his displeasure, and he cuts away the beautiful limbs that perfected their golden fruit secure from the high winds, and at the time of gathering within the reach of the little ones of the family.

If he had looked about him he would have seen that nature takes special pains to shield the trunks of all her trees; but he stops not to think; those branches that gave such needful protection to the stems, and shielded them from the burning sun of summer and the sudden thawing in winter, must come off. He stops not till there is nothing left in the *way* of his team when cultivating the soil.

Years roll on. Nature does all she can to repair the evil, and the head, now higher and more exposed to high winds, has become thick, and the limbs have grown large. The cropping process has been continued from year to year, and very little has been returned to restore the elements that have been taken away—not even the ashes made from the limbs chopped from the trees; but they were sold to a peddler for one shilling per bushel, while any tree in the orchard would have paid two dollars per bushel in ruddy, luscious fruit, if they had been restored to the soil.

This *pruning* is not performed regularly, but at long intervals of years, and is the grand specific for all the ailments of tree or fruit. The result of the constant robbing of the orchard is seen in the diminished quantity and inferior character of the product, and so the owner *prunes* again, without stopping to think whether the defect may not be in the soil, or whether it is done at the proper season of the year. But in early spring, just as the sap begins to circulate, he has found a leisure day, and he slashes away at the trees, cutting off some branches near the trunk and others a foot or more from it, and never cutting them smoothly or putting on any paint or other substance to protect the amputated limb from the atmosphere. The stumps of these large branches, left unprotected, will decay, slowly it may be, but surely, until the trunk is reached, and the tree finally falls a victim to this malpractice.

For these old orchards we prescribe no remedy. As a *preventive* of bad pruning and at the wrong time, buy Downing's, Barry's, Elliot's or Warder's works on pomology, and *practise what they teach.*

INJURIOUS INSECTS.

In regard to the question whether the unfruitfulness may not be charged to the increase of injurious insects, we regret to say that the member of the committee to whom was assigned this part of the subject was unable to give to it his personal attention and make a report, and consequently the other members of the committee have been able to give it only a very cursory examination.

That insects injurious to our apple crops have greatly multiplied in the last decade, and are still on the increase, is a fact that every horticulturist understands, and needs no further evidence to confirm it. It is a sorrowful sight to pass through our orchards when the fruit is being gathered, and see the large piles of rejected, knotty, ill-shaped and worm-eaten fruit, and in some cases the smaller heaps of fruit that is really marketable. No matter how favorable the situation, or genial the climate, or fertile the soil; no matter how thrifty the trees or comely their shape, it all goes for nothing if the fruit is to be destroyed by these orchard pests.

In our necessarily brief notice of this part of the inquiry, we can only name a few of the most prominent of these depredators and destroyers of our hopes.

First, as affecting the tree and its foliage, may be mentioned the Apple Bark Louse, the *Aspidiotus Conchoformis* of the entomologists, as becoming very destructive in some places, by covering the trunk and limbs with their unsightly scales; and their young, when hatched, feed on the juices of the young branches and twigs, and if not destroyed, the tree will soon present a sickly, stunted growth, and cease to be productive. The remedy is simple and easy. Scrape the rough bark from the tree in May, and for old trees wash with strong lye made from wood ashes or a solution of potash. For younger trees the solution should be weaker.

The *Aphis Mali*, or Apple Leaf Louse, deserves a passing notice. You will find a description of this insect in Dr. Warder's Pomology, page 314. On the apple, the majority of them are small, green, wingless insects, found crowded together upon tender green parts of the young shoots and the under side of the leaves, sucking out the very life of the tree.

Remedy: The Dr. says, as a preventive, scrape off the rough bark from the tree, under which the insect deposits eggs, and wash with alkali solution. As a remedy when found preying upon the leaves and young shoots, your committee have tried and would recommend a strong decoction of tobacco, with the addition of a little soap. The branches and leaves may be syringed or immersed in the fluid, and this should be done upon their first appearance, as they multiply with astonishing rapidity.

The *Conotrachelus Nenuphar*, commonly called the *curculio*, next demands our attention. The first thing that we will say about him is, that he is an old offender, having been written about as early as 1803, by Dr. James Tilton, of Wilmington, Delaware, and written about by Dr. Mease. But, although he so early fell into the hands of the doctors, in his American history, yet, in this instance, they failed to *kill him*—greatly to our damage and regret.

He has been so often described that every horticulturist knows his habits and the destruction he makes with stone-fruits. The female, as is well known, prefers the plum and other smooth stone-fruits in which to deposit her eggs for the next generation, yet, not satisfied with these, or finding the supply too scanty, she will make use of the peach, quince, apple and pear.

This is proved by finding the same grubs in these last-mentioned fruits as in the plum—and although in the apple, the fruit does not fall as readily to the ground as the plum, yet if stung by these insects it becomes knotty and unfit for market.

The greater destruction of the apple arising from this cause is found to exist when the apple-orchard is contiguous to plum trees and other stone fruits. We have seen an apple-orchard, where peaches were planted among the trees, and plums, cherries and nectarines near by, so badly affected, that scarcely a bushel of smooth, fair fruit could be found. In this case the fallen fruit was suffered to remain on the ground, ungathered and uneaten by animals.

All the nostrums that have been advertised from time to time have been of little account. The most promising among the new remedies is syringing the trees frequently with coal tar-water, from the time of blossoming for four or five weeks.

This experiment has been made the past year with success, but needs further trial before it can be pronounced a remedy. The sure thing is to catch him and kill him while in the perfect state, by shaking the insects down upon cloth prepared for the purpose, and killing them. But, in our opinion, more depends upon destroying the fallen fruit *daily*, in the abatement of this nuisance, than in killing the current generation.

We will not weary your patience by describing that hungry family that belong to the order called *Lepidoptera*, and of which, Dr. Harris says, "to this group belong the caterpillars that swarm in the unpruned nurseries, and neglected orchards of the slovenly and improvident husbandman," but will refer you, for a description of each family, to the Doctor.

But we are unwilling to pass along without saying something about the Codlin Moth—the *Carpocapsa Pomonella* of the books. You will find an extended description of this destructive pest in Harris' work on "Injurious Insects;" and a correct but shorter account in Dr. Warder's Pomology, which, with the leave of our worthy President, we will read:

"The Codlin Moth, introduced from Europe, has been steadily increasing from year to year as our orchards grow older, until now we have few perfect fruit left.

"The moth appears early in the summer to lay the eggs of the first crop of worms. The eggs are dropped upon the blossom end of the apple; that affords an entrance to the young worm, which passes to the core, about which it consumes the pulp and seeds."

"The worm is whitish, becoming flesh-colored in warm weather; it attains its growth in three or four weeks, and makes its exit by gnawing through the side of the fruit."

"It instinctively seeks the stem of the tree to secrete itself under the scales of bark, and thus afford an opportunity to destroy it in its pupa state, for it will creep under anything that may be put in its way."

And further on, in regard to remedies, the Doctor says all wormy fruit should be gathered as soon as it falls, and either be boiled or fed at once to swine.

And before closing, permit me to say, that in contending with our insect foes, we must fight them here in their entrenchments, in the larva and pupa state. In the perfect form they escape our notice or elude our grasp; but when inactive, we can combat them more successfully. We must "fight them on this line," if we would succeed. We would say to every cultivator throughout the State, *destroy the fallen fruit daily, in some way.* If you have swine enough to do it, let them have the job; they will do it well, and pay you handsomely for the privilege—in good pork. If you cannot turn in your hogs, employ some one to gather up the fruit; it must be done, or in many places our orchards will be a *failure.* If you cannot this season combat the 10,000 that are destroying your hopes and depleting your purse, how will you meet the 100,000 next year, and so on from year to year, as they increase in fearful ratio?

Insects have their natural enemies, which hold them in check, and we should learn to distinguish our friends from our foes, that we might aid the one and destroy the other. Is the production of fruit of so small consequence compared with other interests and industrial pursuits that it is unworthy of the support of our best men and the fostering care of the State? The produce of a single county might not arrest your attention, but when multiplied by the number of counties in the State, the sum swells up into magnificent proportions. For example, the commercial value of the apple crop alone in the little county of Lake, for the present year 1868, is at least $100,000.

The total amount of the apple crop for the whole State according to the Agricultural Report for 1867, was 9,400,000 bushels; which, at 50c. per bushel, would amount to more than four and a half millions of dollars for a single year for apples alone. The number of bushels of peaches grown in the State, as reported for 1867, was more than 1,400,000 bushels, which, estimated at the low price of $2.50 per bushel, amounts to more than $3,500,000. The pear crop, according to statistics, was worth more than $500,000. The aggregate of these three kinds of orchard fruits amounts to more than $8,500,000; while nothing is said of quinces and other fruits.

Imperfect as the statistics may be, they aid us in forming an estimate of the great commercial value of our orchard crops.

But as great as the aggregate now is, it may be easily increased an hundred,fold, when a more correct knowledge of the best method of cultivating our orchards, and destroying their enemies, shall stimulate the grower to put forth his best efforts. But we have looked upon our orchards only as a matter of dollars and cents. Who can estimate the value of our fruits in all the social and domestic relations of life?

Acceptable alike in the palace of the rich and the cottage of the poor; they contribute daily to our highest refined enjoyment of perfect health; and when sickness overtakes us, they are the first to cheer us and refresh us with their cool, acidulated drinks.

First and foremost among all the fruit gifts that a kind Providence has bestowed upon us in this favored land stands the APPLE; and we could bear the loss of any *one*, and even *all other kinds*, as valuable as they are, better than the loss of this king of fruits. Viewed in this light, whatever evil influence occasions "*premature decay*," or diminishes the products of our orchards, not only injuriously affects the treasury, but, what is above all price, the health and happiness of the people.

In conclusion, Mr. President, we thank you and the gentlemen present for so patiently listening to this imperfect report of your committee. We have looked at the broad field that has been assigned us, and have longed to traverse it in the length and breadth of the State, but adverse circumstances beyond our control have prevented. We earnestly hope that the objects of inquiry that have been only partially examined, may be entrusted to gentlemen who will gather up and present such facts at our social gatherings as will enable our Society to send out over the land that information which every tiller of the soil needs, to become a successful cultivator of fruit.

J. STORRS,
Chairman of Committee.

REPORT OF JOHN D. CLARKE, OF LANCASTER, OHIO.

Jesse Storrs, Esq., Chairman of Committee to investigate the causes of the "deterioration of the orchard crops of Ohio:"

As a member of your committee, I beg leave to make the following report as the result of careful inquiries in regard to the general health and fruitfulness of apple orchards in South-central Ohio:

The question was presented for discussion to the Hocking Valley Horticultural Society at the regular meetings held in Lancaster January 25th and February 8th, 1868. The attendance at these meetings was unusually large, and much interest was manifested by the public in regard to the conclusions arrived at during the discussion, which were, in substance, as follows:

First—That as regards the alleged comparative unfruitfulness of the apple orchards of late years, the proposition itself cannot be sustained in reference to the orchards of this region.

Second—That our orchards are as productive now as at any former period, and that in respect to the summer and fall varieties especially, they are grown in greater quantity and perfection now than heretofore.

Third—That the annual supply of winter apples has diminished in quantity, and that in keeping qualities there has been a deterioration, but that this is local in cause, and is under the immediate control of the orchardist, and not climatic, or consequent upon the clearing away of the forests and more perfect drainage of the country.

Fourth—That these *local* causes are, first, the introduction of many varieties from more northern latitudes, that ripen prematurely here, thus becoming *late fall* apples of inferior quality, not being adapted to our soil and climate. Second, the neglect to prune, enrich, and cultivate, or improper pruning, or the growing of crops that are injurious to the health and fruitfulness of the trees. Third, the ravages of insects which are multiplied with astonishing rapidity where no efforts are made to keep them in check.

Fifth—That we should plant only such varieties as are adapted to our soil and climate. Prune often, avoiding the cutting of large branches. Manure and cultivate so as to prevent the exhaustion of the soil. Make war on injurious insects and exclude all kinds of stock from the orchard, excepting hogs, during the fruit season.

[In reference to this report from the Hocking Valley district, it was remarked that it was made a year ago, just after a plentiful apple crop. Had it been made at the present time, after the failure of the past season's crop, it is probable that the tone would have been a little different.]

After some general remarks on the importance of the apple crop, and the necessity of promulgating information respecting the means of its improvement, on motion, it was resolved that the committee be requested to continue their investigations another year, and to employ such aid as they may be able to obtain in the work; and for defraying the expenses of printing, postage, travel, etc., the sum of one hundred and fifty dollars be appropriated from the funds of the Society.

Injurious insects being the topic of discussion, several plans were suggested for checking this evil in apple orchards. Mr. Storrs recommended keeping hogs in the orchards during summer to devour the fallen fruit and also loosen the soil by their rooting. He gave some facts and observations in support of this practice. Mr. Burrows, of Lancaster, had seen beneficial results from keeping hogs in orchards, in Western New York, where he formerly resided. Mr. Richmond, of Sandusky, turns two hundred sheep into his orchard, for half a day or a day at a time, about twice a week. They eat up the fallen fruit and prevent the growth of weeds, sprouts and bushes. If suffered to remain too long the sheep may bark the trees. He prefers sheep to hogs.

Mr. Manning, of Harrisburgh, spoke of the usefulness of birds in destroying insects and the need of protection against strolling gunners. He prefers birds to both sheep and hogs. His trees are so low headed sheep would eat the branches; does not make pasture lots of his orchards, but cultivates them as fruit gardens.

Mr. Mears, of Clermont county, said there had been great falling off in the fruit crops of Southern Ohio, whatever the causes might be. There were still instances of good success, and we want the facts in regard to them. He believed good care and cultivation were the chief elements of success.

Mr. Elliott advocated close planting of orchard trees, then till the ground, and allow no crops between. When the trees grow together cut away one-half of them.

Mr. Bateham believed that a change had been going on in the climate, not, perhaps, in the average temperature or amount of rain, but in the increased aridity of the atmosphere, and the greater severity of summer drouths, affecting injuriously the trees, and causing fungus on the fruit. This did not so much affect the lake shore region.

Mr. McMasters, of Delaware county, said his locality was in a valley, and fruit was generally better on the hills than in the valleys. He thinks man can do but little in fighting against insects. Many of them come and go mysteriously. He believes in good cultivation of orchards and low heads of trees. He mulches his fruit trees with litter or spoiled hay. Trees on rich valley lands grow larger and need more space than on the hills.

Mr. Storrs said some varieties of apple trees needed considerable more space than others; he thought from thirty to forty feet was necessary for full grown trees.

Dr. Warder spoke of the worm of the Codlin moth as the greatest enemy of the apple crop. He approved of sheep and hogs as effective helpers in keeping this insect, as well as the curculio, in check, by devouring the fallen fruit. He gave a brief account of the transformation of the Codlin moth (see his work on Pomology), and recommended Dr. Trimble's hay band remedy or trap for the worms. These bands should be tied around the trunks of the trees in early summer (June), and the larvæ will be found under them in July and August. We need a *State Naturalist* to instruct our people about these things.

NEW METHOD OF PRESERVING FRUITS.—Mr. Boalt, of Norwalk, exhibited specimens of various fruits and vegetables, preserved in open vessels by Mefford's process—the use of *sulphurous acid gas*. The fruits were tasted freely by the members and visitors present, and found to be in perfect state of preservation, with the slightest possible odor or taste of sulphur about them. This, it was thought, would not have been perceptible if not suggested to the mind by a knowledge of the ingredient used. Much interest was manifested in the subject by all the company, and Mr. Boalt spoke on the subject in substance as follows:

MEFFORD'S NEW METHOD OF PRESERVING FRUITS.

The interests of horticulture demand an auxiliary in the shape of a cheap and effective system for preserving fruits, in order that the households of the million need not, in the enjoyment of the products of the tree and vine, be confined to the mere fruiting season. If fruits could be easily preserved, so as to be afforded at *moderate prices*, the consumption of the same would increase in the ratio of the reduction in price; and it is fair to presume that the fruit-producing area would be increasing in the same ratio to meet that demand.

The way markets now stand, especialy for perishable fruits, is no criterion by which to judge what prices fruits in a preserved form could be afforded at, out of the ripening season; for in the market it is either feast or famine; and the horticulturist, when he starts from home with a load of perishable fruits, does not know whether he will find the market buoyant or flat. This would be regulated by a cheap system of preserving, and all flurry and bustle to get his fruit sold and eaten up before it rotted, would give way to a quiet, sure, pleasant and profitable employment in putting his fruit beyond the reach of decay. It would equalize prices during the year, and consumers could and would buy, at prices highly remunerative to the horticulturist, all the fruits that would grow on twice the present area of land devoted to fruit raising.

Heretofore we have had no system but that of canning—a system too expensive, in a commercial point of view, for any but the wealthy, for the reason that the air-tight envelope costs so much *itself*, that it makes its contents a costly luxury. Gentlemen will be surprised when I tell them that the empty can usually costs from two to four times as much as the fruit it is to contain, depending, of course, on the kind of fruit which is to be encased. Now these cans, as a general thing, are of no use to the consumer, and are treated the same as the shells of oysters—opened, contents taken out, and then thrown away. The laboring classes cannot afford to do this, and hence they do without. Railroad express companies are some aid in taking away fruits when there is an excess from a plentiful crop, and distributing them in localities where there is a demand; but the charges of these monopolies are only a repetition of the costly air-tight can.

To show you how the canning system works on a commercial scale—one preserving house in Cincinnati, last fall, paid for tin cans and tinners' bills, for their tomatoes, $15,000 for 15,000 dozens of two-pound cans. The quantity of tomatoes encased in these was 35,625 gallons. All that the fruit, ready to go into the cans, cost them was about $4,000, or a little over one-fourth the cost of the cans. Now if the masses could have these fruits without being compelled to pay that enormous tinners' bill ($15,000), the community at large would gladly do it, and people would very willingly buy fruit in larger quantities, and have it more frequently on their tables.

A system, therefore, that can dispense with the use of the air-tight can altogether, is what is needed, and just what horticulture demands. That system is now in use. It has been thoroughly tested, and has not as yet been found wanting. Last year it was tested in an experiment of about seventy-five gallons of peaches, and they completely filled the bill, both as to the preservation of their texture and flavor. This year we have put up more than ten thousand quarts of various kinds of fruit, and the superiority of these fruits, as compared with those canned, is the remark of every one that visits our store in Norwalk. In putting them up we use no canning liquid or powder. We treat our fruits before scalding, with *sulphurous acid gas.* This gas, impregnating the fruit, hardens the tissues, so that it does not break down in scalding or steaming. Our vessels for holding the fruit are stoneware, and as this suffers no injury whatever from the fruit, it lasts for years in the business; or when emptied of their contents, command as good prices as new ware. The constant tendency of the fruit is to throw off the anti-septic, and in time the surface of the fruits in the jars would mould. To prevent this, we use a sweet wooden lid, charged with the gas and applied to the surface of the fruit in the jars; and should these mould at any time, they can be recharged and replaced. Fruits can be dipped from these jars at all times and in quantities to suit, without endangering in the least what remains, for our fruit is exposed at all times to atmospheric influences, being in open vessels. All who desire to see for themselves the operation of a system that is sure, sooner or later, to supercede canned fruit as a commercial article, are invited to come to Norwalk and visit the store of

Mefford, Boalts & Co., and taste the fruits and examine the system by which they are preserved.

SECOND DAY'S PROCEEDINGS.

Mr. Elliott, of the Committee on Furtherance of the Objects of the Society, presented the following report:

The committee honored with the duty of preparing some system or course of action that might assist the collection of practical information relating to all branches of horticulture, respectfully suggest the following: That a committee of five members be appointed, to be called the committee for the collection of local knowledge; two of the members of this committee to serve for two years, and the places of the other three to be filled at the next annual meeting.

It shall be the duty of this committee to prepare one or more texts or subjects for discussion and the eliciting of practical knowledge on horticulture; cause these texts or questions to be printed, and forwarded monthly to each horticultural society or club in the State, with a request that its discussion be made a part of the programme of each society at its meeting; also requesting the secretary of each society to prepare a condensed record of such discussion, and send the same, as soon as practicable, to the secretary of the State Horticultural Society.

The secretary of this Society shall be a member *ex officio* of the committee, and in addition to his present duties be required to prepare and collate condensed reports of these several reports from the local societies, and hold the same subject to the use of the Society.

The cordial co-operation of each local society to be respectfully invited, calling their attention to the importance of the object, and the great value to be derived from the proposed united gathering of knowledge; also requesting them to forward to the committee any suggestions respecting topics for discussion, or plans for the gathering and diffusing of horticultural knowledge.

Also, that we invite from every horticultural club or society in the State the attendance of one delegate, and these shall be heartily welcome to participate in the discussions at such meetings.

After brief discussion the report was laid upon the table till the afternoon. It was then, on motion of Mr. Bateham, amended so as to make Mr. Elliott the secretary of the committee, and the one who shall have the duty of compiling the reports, etc.; then it was adopted.

DISCUSSION ON EVERGREENS.

About an hour was spent in a general discussion on evergreens, eliciting only a few points worthy of special notice. Mr. Elliott, being called on, spoke of the common error in planting door-yards and small grounds, choosing evergreens of too large growth, as the Norway Spruce, Austrian Pine, etc., which, although handsome and appropriate, perhaps, while young, soon monopolize too much space and obstruct the pathway or the prospect, and become a detriment rather than a benefit to the premises. People should learn to choose varieties of slow and dwarfish growth, as the American Spruce, and the several species of Dwarf Pines, which are beautiful and appropriate for small enclosures. Nurserymen should provide larger stocks of these, so as to furnish them in abundance at moderate prices, and recommend them to their customers.

Mr. Pentland, of Hamilton county, also spoke in favor of the Dwarf Pines, and some species of the Juniper.

Mr. Manning and Mr. Storrs commended the Hemlock, as deserving of more praise and culture; also the Siberian Arbor Vitæ. These can easily be kept in very moderate bounds by clipping.

Dr. Warder spoke of the great value and beauty of the Norway Spruce and Pines for large grounds, and especially for screens and hedges, for the protection of orchards and gardens from winds, etc. He alluded to the interest that is manifested in this subject in Illinois, and the immense numbers of evergreen trees now being annually planted in that State, and the millions of seedling plants growing in the nurseries.

Mr. Bateham said the farmers of Ohio ought to give attention to the planting of belts and screens of evergreens to shelter their fields and orchards from the cold and drying winds, now so injurious, since the forests have disappeared.

Some remarks on planting, distances apart, etc., finished up the discussion. On motion of the President, Mr. Elliott was appointed to report on Evergreens at the next annual meeting.

ON RASPBERRIES.

Mr. Elliott was requested to give information about the *Naomi*. He said he could only repeat what had been already published respecting it. It was produced from seed, about fifteen years ago, by Mrs. Gov. Wood, of Rockport, near Cleveland. She had quite a lot of seedlings, and, observing this one as superior to the rest, he named it Naomi by Mrs. Wood's consent, and afterward, when its hardiness had been well tested, he wrote a description of it, which was published in several journals. Care was not taken by Mrs. Wood, nor her son-in-law, Mr. Merwin, to keep the plants distinct; hence a number of inferior seedlings were mixed with the Naomi, and afterwards disseminated as the true variety. He once took up 100 of the plants, by direction of Mrs. Wood, and such as she considered genuine, but afterwards found not over a dozen true Naomis in the lot. This will account for the disappointment of several parties who obtained plants for Naomi, from responsible sources, as they supposed, but found them inferior to the descriptions.

Being asked in what respects the Naomi differed from the Franconia, Mr. Elliott said he had both varieties in his garden, and there was such a resemblance as led him to conclude that the Naomi was from seed of the Franconia. Indeed, it was difficult, without close observation, to distinguish them; still, there was some difference in plant and fruit, and while the Naomi was equal, if not superior to the Franconia in other respects, it had the advantage of being hardier, enabling it to withstand the winters of the lake shore perfectly for the past ten years or more.

Mr. Richmond said he had been very much interested in this Naomi question. He was engaged in growing raspberries with other fruits, and had taken much pains to find out and procure the best varieties, both in this country and Europe. He was a member of the committee who inspected raspberries in the gardens around Cleveland last summer, and he was exceedingly pleased with the fruit which they took to be the true Naomi, especially as seen at Collamer on Mr. Hall's grounds. It was the finest show of raspberries that he ever saw, and he was convinced that the plants had no extra cultivation nor winter protection. He did not know what the true name was, but he did not think it was any foreign variety, nor was it what he and some of his friends had obtained for the Naomi, which was inferior to these. [See *Ad Interim* report of meeting at Cleveland.]

Mr. Campbell expressed his belief that the variety now regarded as the true Naomi is really the Franconia, and that the inferior variety seen by the committee at Mrs. Wood's and Mr. Merwin's is really Mrs. Wood's Seedling, which was named Naomi by Mr. Elliott.

To this Mr. Elliott replied that Mrs. Wood never had the Franconia; she never bought plants of any kind; and the committee found the true Naomi in her grounds, as well as the spurious.

The Mrs. Wood Raspberry, Mr. Elliott said, was another seedling raised by Mrs. W. It was, apparently, from seed of the old Purple cane, and nearly related to the Black-cap family. Its chief value was its lateness. He could not say much as to the size or quality of the fruit.

Miami.—Mr. Mears, of Clermont county, said he lived in the Miami Valley, and two varieties of Black-caps had gone out from there, both of them, in his judgment, superior to the Doolittle; the largest and best one was about a week later than the other. Some had thought this to be the "Mammoth Cluster." He did not know any variety by that name.

Mr. Campbell believed the Miami and Mammoth Cluster to be the same; he had both now in his grounds, and could probably decide next year. The Canada Black-cap seems also to be another name for the Miami.

Clarke.—Mr. Campbell said the plants of this variety seemed perfectly hardy; had withstood twenty degrees below zero without injury. It was also productive and of good quality. He considers it the best hardy red raspberry as yet fully tested.

Mr. Richmond found it sufficiently hardy, but not as good a bearer as he could wish, and the plants threw up suckers too profusely.

Philadelphia.—Mr. Manning finds this the most hardy, productive and profitable. Mr. Weltz, of Wilmington, concurred. Mr. Richmond also approves it—a little later than Kirtland with him, and good for succession, though the fruit was deficient in flavor. Mr. Buttles said it was very productive and of better quality than the Black-caps. Mr. Richmond said the Sandusky people preferred Black-caps to the Philadelphia, or even the Kirtland; they would pay one-third higher price for them; perhaps because they were less abundant there.

Mr. Mears spoke of two seedlings from the Belle de Fontenay, which he thought quite promising, but need further trial, called Parnell and Baker. Dr. Warder also spoke favorably of them; not quite sure as to their hardiness. Mr. Weltz said his son had a promising new seedling of Purple Cane.

Inquiry was made respecting the variety of Ever-bearing Raspberry exhibited at the State Fair by Mr. Miller, of Clinton county, but no further information was given.

BLACKBERRIES were briefly discussed, and but few points of interest made. Mr. Richmond and Mr. Campbell said the Wilson was not quite hardy with them. Dr. Warder said it was early, but fruit not superior in quality. Mr. Campbell found Kittatinny hardy and vigorous; fruit fair size, abundant and good. Mr. Richmond concurred, but wished the fruit was larger. Mr. Bateham said the fruit was large and fine at Mr. Knox's the past season; he regarded it as superior to the Lawton; it was ripe when black, while the Lawton was seldom fully ripe when picked, and the color soon changed afterwards; that it was a poor market fruit. Dr. Warder said the Kittatinny was the most popular of all with the fruit growers of New Jersey.

STRAWBERRIES.—Mr. Bateham called for information about the *Boudinot*, a new Ohio seedling originating in Licking county. Very flattering accounts of it appeared in the papers last year, and some plants of it were sent to him a year ago, but in consequence of drouth they had not done very well, but he was favorably impressed with it, and should give it careful trial. The quality of the fruit was superior to the Wilson, but the size and form not seemingly quite as regular and handsome.

Dr. H. Boudinot, of Alexandria, gave an account of the strawberry as produced by him from seed of a very fine specimen of the Wilson, in 1862. Mr. Andrew Merriman, of Granville, having observed the fine quality of the berry, took pains to propagate it and make its merits known for several years past. The printed testimony of a number of respectable citizens of Licking county was distributed among the members, setting forth the merits of the *Boudinot*, to the effect that it is found to be earlier and better every way than the Wilson; "the berries average larger, more compact, richer flavor, more numerous, and better carries;" and Mr. Merriman offers a premium of $1,000 for any strawberry plant that will yield more and better fruit, in weight, from the same number of plants, one year old.

Several gentlemen in the meeting testified to the respectability of Dr. Boudinot and Mr. Merriman, and to the fine appearance and quality of the strawberry as they had seen it in Granville.

It was suggested that some members of the *Ad Interim* committee would visit Granville and inspect the fruit next June.

Mr. Campbell spoke briefly of several now varieties tested by him the past season. [See his notes in *Ad Interim* reports.]

Mr. Bateham said he had a few plants of *Nicanor*, which bore fruit, and he was highly pleased with it. The fruit is of good size, uniform, handsome shape, good color, firm texture and fine quality. The plants seem vigorous and productive; he thought it promised to be a good market as well as family variety. But for size and appearance he had not yet seen anything equal to the *Jucunda;* and Mr. Knox continues to make more money out of it than all other varieties together. [See remarks on his crops in *Ad Interim* reports.]

Mr. Buttles planted some of *Nicanor* and *Dr. Nicase* last spring; both had been highly productive of *plants;* had no fruit yet. Jucunda had not done as well with him the past season as formerly. Green's Prolific had done remarkably well with him; fruit too soft for distant carriage, and rather sour.

Mr. Richmond had found the *Ida* very productive and profitable for market; it continues a long time ripening. Had planted Seth Boyden and Chas. Downing, both large and promising varieties; not fairly tested.

Capt. Spalding had a strawberry bed consisting of Jucunda and several other varieties. The first crop of fruit was quite good; the runners were kept off and the ground mulched with tan; the growth of leaves the next season was very strong—too rank indeed—and the next crop of fruit was almost a failure. Was it in consequence of the mulching, or was the ground too rich?

Mr. Bateham said he saw the strawberry bed of Capt. Spalding at fruiting time the past summer, and it was a striking case of failure. In his opinion the soil was too heavily manured as well as mulched; and, being a strong moist loam, with a rainy month of June, the failure is accounted for.

Mr. Cox, of Clermont county, spoke well of Green's Prolific as a market fruit; said it sold better than the Wilson in Cincinnati market. Had tried Durand's Seedling, with poor result.

DISCUSSION ON GRAPES.

On motion, it was decided that as time was short, only one hour should be devoted to grapes.

Mr. Bateham alluded to the handsome box of Iona grapes upon the table, from Judge Phillips, of Berlin, and the fine display of this fruit at the State Fair, last fall, as evidence that this variety was succeeding well in some localities; and in fact he could say it had done well almost everywhere along the lake shore, so that he had come to regard it as the best grape of all for that region. From a full trial of it, used freely in his family, along with a dozen other varieties, for several weeks, he found that children and adults would eat more Ionas every day than any other variety.

Mr. Stevenson, of Clyde, had several tons of Iona fruit this year. Vines had grown well and bore enormously—second crop Was greatly pleased with Iona; had planted a few Eumelan; growth the first year magnificent. He exhibited some jelley made from Iona grapes, which was pronounced first rate.

Mr. Storrs, of Painesville, said Iona vines grew well with him on gravelly soil with a little manure.

Capt. Spalding, of Cleveland, thought the Iona vines heretofore planted were weak from excessive propagation, and now that strong roots were beginning to be used we should find better success.

Mr. Buttles spoke of his sad experience with 2,000 Iona vines bought of Dr. Grant, some years ago, and said he felt that the extravagant praise of the vines and variety was a swindle.

Mr. Stevenson replied that he bought 1,000 vines of the same party, the same season, and found it a first-rate investment—only wished he had more of them.

Mr. Bateham did not think that climate alone was the cause of Mr. Buttles' failure with Iona; for some persons in that region had succeeded with it. He alluded to the experience of Mr. Limpert, of Groveport.

Mr. Buttles replied that Mr. L. succeeded with all kinds in his sheltered garden. For his part he found the Concord, Hartford and Ives the most sure and profitable.

Mr. Mears said the Ives was the only grape talked of in his region, and was destined to revolutionize the world!

Mr. Elliott asked whether the Ives was good for anything except for wine.

Mr. Cox said it sold well early, in Cincinnati market.

Dr. Warder said the same of Pittsburgh market.

Mr. Elliott thought the people who bought the fruit would not do it a second time, unless they had strange taste.

Mr. Clarke, of Lancaster, said that Concords sent early to Cincinnati market netted 12c. per lb. Ives and Hartford about the same.

Mr. Buttles sold his Concords in Columbus, by the ton, at 4 to 5c. per lb.

Creveling.—Mr. Manning spoke favorably of this as an early table grape for family use; the faulty character of the bunches was improved by planting the vines alongside of the Concord.

Mr. Barney, of Sandusky, regarded the Creveling as the best flavored of all the black grapes; was sorry the bunches were not sufficiently handsome to make it a good market variety.

Mr. Bateham said he had seen the bunches quite compact and handsome at Mr. Knox's, grown alongside of Concord and other varieties; but he had them grown on his own grounds at Painesville, alongside of Hartford Prolific, Concord and Delaware, and the bunches were quite defective. He thought we have yet to learn something of the requirements of this grape.

Mr. Burrows, of Zanesville, said he had concluded that the best three varieties for his region were Concord, Hartford and Ives.

Mr. Ohmer said the same for the vicinity of Dayton.

Mr. Manning, of Franklin county, chose Concord and Creveling; Hartford drops too much, and Catawba does not ripen well; Delaware and Iona shed their foliage.

Capt. Spalding preferred Concord, Catawba and Delaware.

Martha.—Mr. Campbell spoke of it as Concord refined. Dr. Warder concurred. Sweet, and most people said very good; deserving the same place among white that Concord had among black grapes—less liable to injury by wet.

Nides.—Mr. Elliott spoke of this as a good early grape, though small—vine hardy, healthy and productive.

Arnold's Hybrids, of Canada.—Mr. Barney had seen some of them, and thought there was value in two or three of them.

Longworth's.—Mr. Underwood, of Columbus, was growing several of Longworth's varieties—No. 20, Extra White, California White, and several others of considerable promise. See Judd & Co.'s *Horticultural Annual.*

Eumelan.—Mr. Barney spoke of tasting this fruit at the grape show in Canandaigua, and finding it much better than the specimens at the Toledo fair. Bunch of fair size and form, flavor vinous and very good—was much pleased with it.

Salem.—Mr. Bateham spoke of this and the other Rogers' Hybrids as having done very well generally the past season, and their appearance and quality exceeding the expectations of most people. At Pittsburgh and Rochester, as well as at Painesville, the display of these had been remarkably fine. He understood that Mr. Rogers was about to give names to about a dozen of his best hybrids. See *ad interim* reports.

Hine.—Mr. Elliott asked for information about Hine, as it was claimed to be an Ohio seedling of some promise. He had received two different black grapes as Hine.

Mr. Richmond said spurious varieties had been sent out as Hine. It is of dark Catawba color. He could not yet speak very definitely as to its value.

Mr. Barnes thought it not sufficiently hardy. He believed the originator, Mr. Brown, was of the same opinion.

Walter was called for, but no response.

ON PEACHES.

It was remarked that Ohio was more of a peach-growing State than many people supposed. The assessors' returns show that the crop of 1867, which was not a full one, amounted to nearly one and a half million bushels (1,402,849). The President called on Mr. Kemp, who is a large grower of this fruit, in Butler county, to give some of the results of his experience in the matter of varieties and culture.

Mr. Kemp said he found the peach crop as reliable as most others; had only failed two years out of eight. He has 100 acres of peaches; finds good demand for the fruit, if well grown and properly shipped; sends mostly to New York; has given much attention to varieties; prefers few kinds; has 50 acres of only three sorts—Old Mixon Free, Honest John (Large E. York), and Smock. Troth's Early and Hale's Early also good. Heath Cling also sells well. He chooses good soil; plants trees 20 feet apart; cuts off branches and top; cultivates three years in corn; finds good culture pays; prevents injury from borers by hilling up the trees, and by digging them out with a knife twice a year. In shipping peaches he finds it important to use none but good, new boxes, of nice, smooth pine, and have the fruit well selected. In a lot of nice fruit sent to New York one or two old boxes were used, and these had to be sold for $2 per bushel less than the others—only half price. His choice of varieties for succession would be, Hale's and Troth's Early, Large E. York, Crawford's Early, Old Mixon Free, Crawford's Late, Heath Free, Smock, Old Mixon Cling and Heath Cling.

Mr. Weltz, of Clinton county, another extensive peach-grower, said he was expecting to plant 10,000 trees; will choose the proportion of varieties about as follows: One thousand each of Hale's Early, Serrate Early York, Old Mixon Free, and Stump the World; fifteen hundred Smock; two thousand Freeman's White (of New Jersey); five hundred each of Red Rareripe, Royal Kensington, Heath Free, Heath Cling and Ward's Late.

Mr. Clarke, of Fairfield county (formerly of the Reform Farm), said he would choose Crawford's Early as best of all, then Crawford's Late, Heath Cling, Smock, Serrate Early York, Red Rareripe, Ward's Late, Cooledge's Favorite, New York White Cling.

Mr. Buckingham, of Clermont county, said the peach crop was reliable and profitable in his region. He finds Hale's Early, and other white-fleshed early varieties, liable to rot if wet and hot weather about the time of ripening. He approves Ward's Late, Old Mixon Free, Crawford's Early and Crawford's Late.

THE BEST PEARS AND CHERRIES.

But little time was given to discussion on pears and cherries. The *blight* in pear trees still continues to baffle and dishearten the cultivators of this fruit in most localities; still the instances of success are quite numerous, and sufficient to stimulate to extensive planting.

Mention was made by President Warder of the very beautiful and promising young pear orchard of Mr. A. Fahnestock, on Maumee Bay, near Toledo, consisting of ten acres, six years planted, and commencing to bear fruit. The principal varieties are Bartlett, Flemish Beauty, Seckel, Sheldon, Buerre d'Anjou, Buffum and Louise Bonne. No blight has as yet appeared in this orchard. Mr. Ohmer, of Dayton, has also been quite successful in growing pears for the markets.

A call being made for those present having experience in pear culture to name what they regarded as the best two or three varieties for *standards*, and as many for *dwarfs*, the following was the result:

BEST THREE PEARS.

J. A. Warder.—Standard: Bartlett, Tyson, Buerre Bosc. Dwarf: Doyenne d'Ete, Louise Bonne, Duchess.

F. Pentland.—Standard: Bartlett, Sheldon, Howell. Dwarf: Duchess, L. Bonne, B. Lucrative.

L. Weltz.—Standard: Bartlett, Howell, B. Clairgeau. Dwarf: Duchess, Soldat, Laboureur, Louise Bonne.

W. S. Imlay.—Standard: Bartlett, Tyson, Buffum. Dwarf: Howell, B. Lucrative, Duchess.

G. W. Campbell.—Standard: Bartlett, Tyson, B. d'Aremberg. Dwarf: Duchess, B. Lucrative, F. Beauty.

F. R. Elliott approved Bartlett, B. Bosc, B. d'Anjou and D. Boussock; he said Clapp's Favorite promised well, but was not sufficiently tested, and B. Clairgeau was generally good and handsome, but variable.

J. Spalding.—Standard: Bartlett, Seckel, Sheldon. Dwarf: Duchess, L. Bonne, W. Doyenne.

W. Z. Barney.—Standard: Bartlett, Sheldon, B. Clairgeau. Dwarf: Duchess, B. Lucrative, Louise Bonne.

M. B. Bateham.—Standard: Bartlett, Sheldon, F. Beauty. Dwarf: L. Bonne, D. d'Ete, Duchess.

H. Gulick.—Standard: Bartlett, F. Beauty, B. Clairgeau. Dwarf: Duchess, d'Angouleme.

J. D. Clarke.—Standard: Seckel, Bartlett, F. Beauty. Dwarf: L. Bonne, Duchess.

W. A. Burrows.—Standard: Bartlett, Tyson, F. Beauty. Dwarf: Duchess, B. d'Anjou, L. Bonne.

N. L. Wood.—Standard: Bartlett, F. Beauty, B. d'Anjou.

W. E. Mears.—Standard: Tyson, Windsor, Bartlett.

W. J. Townsend.—Standard: Bartlett, Seckel, Sheldon.

G. Buckingham.—Standard: Bartlett, B. Clairgeau, Howell.

E. Manning.—Standard: B. Bosc, Clapp's Favorite, Bartlett, Howell, B. Clairgeau.

A. B. Buttles.—Standard: Buffum, Bartlett, Sheldon. Dwarf: L. Bonne, B. d'Anjou, Duchess.

VOTE ON BEST THREE CHERRIES.

After some discussion on the partial failure of the cherry crop by the rotting of the fruit the past season, without any definite result, the following was the vote on the best three varieties:

Capt. Spalding.—Early Purple Guigne, and two Morellos.
J. Storrs.—Black Tartarian, Rockport, Early May.
F. R. Elliott.—E. P. Guigne, Rockport, Louis Phillippe.
M. B. Bateham.—E. P. Guigne, M. Duke, Louis Phillippe.
W. P. Kerr.—E. May, May Duke, Gov. Wood.
A. B. Buttles.—Black Tartarian, Rockport, Gov. Wood.
J. D. Clarke.—M. Duke, Elton, B. Tartarian.
E. Manning.—Rockport, Great Bigarreau, Red Jacket.
L. Weltz.—E. May, M. Duke, E. P. Guigne.
G. C. Townsend.—M. Duke, Elton, B. Tartarian.
N. L. Wood.—Coe's Transparent, B. Tartarian, May Duke.
W. S. Imlay.—Gov. Wood, M. Duke, E. Richmond.
D. C. Richmond.—M. Duke, B. Tartarian, Gov. Wood.
G. Buckingham.—Black Tartarian, E. P. Guigne, E. May.
W. E. Mears.—E. May, Rockport, M. Duke.
H. Gulick.—E. May, Gov. Wood, B. Tartarian.
F. Pentland.—E. May, Gov. Wood, M. Duke.
J. A. Warder.—E. May, Gov. Wood, B. Tartarian.
G. W. Campbell.—Rockport, Gov. Wood, May Duke.
P. T. Cox.—O. P. Guigne, E. May, B. Tartarian.

GENERAL BUSINESS.

ELECTION OF OFFICERS.—After a variety of nominations, the following were the officers elected for the ensuing year:

President—Dr. J. A. Warder, Cleves, Hamilton county.

Vice President—G. W. Campbell, Delaware.

Secretary and Treasurer—M. B. Bateham, Painesville.

Ad Interim Committee (with the above)—N. Ohmer, Dayton; D. C. Richmond, Sandusky; W. E. Mears, Milford; J. Storrs, Painesville.

Report of the Treasurer was given verbally, with the remark that the receipts and expenditures of this meeting would materially alter the figures, and the report would be made up and printed in the report as usual.

On motion of Mr. Elliott, the officers of the Society were requested to petition the Legislature to increase the amount of appropriation from the State in aid of the funds of the Society, so as to enable the Society to extend its operations.

[This was attended to by the Secretary, but without any increase over the appropriations of the previous year.—SEC.]

PRINTING THE ANNUAL REPORT.—The Secretary stated that there had been some just complaint of the delay in printing the annual reports. The cause of the delay was, the printing is done for the Society at the expense of the State, when the matter is in type for the Agricultural Report, which is not until May or June; and by waiting thus, a saving of about $150 to the Society is effected.

ENGRAVINGS.—The President presented to the Society a series of engravings of insects, from the Department of Agriculture, which were examined and admired, and the following resolution was adopted:

Resolved, That the thanks of this Society be tendered to Hon. Horace Capron, U. S. Commissioner of Agriculture, for the very interesting series of insect engravings made by Mr. Townend Glover, the Naturalist of the Department.

DELEGATES TO THE AMERICAN POMOLOGICAL SOCIETY.—The President spoke of the biennial meeting of the American Pomological Society to be held in Philadelphia in September next, and expressed the hope that a number of our members would be present.

On motion, the officers of this Society were appointed delegates to attend that meeting.

REPORT ON FRUITS EXHIBITED.

The Committee on Fruits reported the following as exhibited on the tables:

From Z. Phillips, Berlin Hights, a nice box of Iona grapes, in fine condition, but not thought to be fully ripe when gathered.

From W. E. Mears, Milford, a dish of persimmons, nearly seedless, and quite good, suggesting the question whether this native fruit cannot be improved by cultivation.

From ——— ? a plate of Vicar pears.

APPLES.—From D. C. Richmond, Sandusky, a collection of seventy varieties, mostly well-known approved sorts—some rare or unknown.

From N. L. Wood, Smithfield, specimens of Grimes' Golden, R. I. Greening, Rox. Russet, King, Evening Party and Bentley Sweet.

From M. B. Bateham, Painesville—Baldwin, Belmont, Baltimore, Egg Top and Sweet Pearmain. Also from R. Marshall and B. Popoon, Painesville, quite a collection of apples.

Dr. J. A. Warder presented, from A. M. Lawver, South Pass, Ill., the Lawver apple, Missouri Superior, Parke's Keeper, Zimmerman, Saint Jo, and Large Striped Pearmain. The Lawver is a very showy and attractive-looking red apple, of fair quality, promising to be valuable for the markets. The Missouri Superior and Parke's Keeper are so much like Large Striped Pearmain, that we have doubts of their distinctions; and "Saint Jo" is as much like Kaign's Spitzenberg as to suggest its being that variety.

A seedling apple by G. W. Campbell, of Delaware, of quite fair appearance, round, greenish, smooth; not yet in season; promises well.

Box of apples from Jos. Waldorf, Mt. Gilead, O., part of them for names. No. 1 is thought to be Wood's Greening; No, 3, Minkler; No. 4, Ben Davis; No. 5, Wagener.

From E. Manning, Harrisburgh, O.—Fallawater, Wine Sap, E. Spitzenberg, King, Rome Beauty, White Pippin, N. Spy, Red Canada, Pittsburgh Pippin, Swaar, Smith's Cider, Ladies' Sweet, Ben Davis, Dodge's Crimson, H. Nonsuch, Stark, Trader's Fancy.

Mr. McMasters, of Leonardsburgh, presented Stark and a number of other apples; and some other lots were on the tables without any names of exhibiters attached.

From Jas. Sigler, McConnellsville, fine specimens of Sigler's Pound, and a variety of other apples.

Mr. Elliott spoke of a promising seedling apple received by him in September last from F. R. Miller, Sugar Grove, Pa., claimed to be a seedling from Talman Sweet.

See remarks on New apples in *ad interim* reports.

REPORT ON POTATOES.

The Committee on Vegetables reported that they found on the tables a very fine exhibition of potatoes, consisting of nearly thirty varieties.

Sixteen varieties are presented by L. Weltz, of Wilmington, Ohio; among these, the finest are Harrison and Pink-eye Rusty-coat, both well-known approved varieties, raised from seed, by Mr. Goodrich. The Harrison, for beauty, quality and productiveness, is not excelled by any potato now generally cultivated. The Pink-eye Rusty-coat is large, handsome, productive, and of good quality.

Fine samples of the Early Rose were exhibited by Mr. A. B. Buttles and Col. G. S. Innis, of Columbus. The committee believe, from inspection of these and other samples, and all they have learned of this variety, that the Early Rose is the best early potato now cultivated.

Good samples of the Early Goodrich were on exhibition from several parties. This variety has not come up to the expectations of planters, in the matter of quality; though we believe the fault is in the season rather than the potato, hence we advise giving it another year's trial.

Large specimens of the Jersey Peach Blow and the White Peach Blow were before the committee. On cutting them, a majority of the former were found to be hollow, which is a common fault of the variety. The White Peach Blow was found more solid, and is believed to be a superior sort.

The Orono was exhibited as "Jackson White"—they being one variety, as we believe. It is of excellent quality, and yields finely.

Quite a number of Patterson's English seedlings were exhibited by Mr. Weltz. From their appearance and the general knowledge we have gained of them, we are not prepared to recommend their cultivation.

D. C. RICHMOND,
A. B. BUTTLES,
H. GULICK,
Committee.

Discussion on Potatoes occupied an hour or more, and was participated in by quite a number of members, but the Secretary took only brief notes, as potatoes are not regarded as *horticultural* products in his county, unless the seed costs $1 a pound.

Mr. Weltz had 38 acres potatoes the past season; he planted Early Goodrich quite early, and some as late as 18th May; the former turned out first rate—300 bushels per acre; the latter very poor—not over 75 bushels. Early Rose, planted early, did well—planted late, poorly. The new English varieties were planted late and proved quite poor; he thinks not more than one or two of any value. Pink-eye Rusty-coat gave fine yield—200 to 300 bushels per acre—and quality equal to Harrison. Peach Blows too coarse and apt to be hollow, on his lands; Monitor the same. Gleason is very good, and ought to be extensively tried.

Mr. Burrows, of Zanesville, had 28 acres potatoes, 12 to 16 varieties; many of them failed—season not favorable. He likes the White Peach Blow and the Buckeye.

Mr. Townsend, of Zanesville, said justice had not been done the Buckeye—none better for the Zanesville market.

Mr. Innis said potato culture had very much increased around Columbus within the past ten years. He formerly planted only three or four acres —now fifty acres; and there are usually three hundred to four hundred acres in his vicinity. Last year (1867) Early Goodrich gave him two hundred bushels per acre, and compared with Neshannock and Buckeye was pronounced best. This year, planted early, the yield was not over eighty bushels per acre; quality fair; while Neshannocks, planted at same time, were not fit to eat; the season too hot. He condemned planting in rows and ridging up; he plants in hills, and cultivates early and often. Several others concurred in this. [See *Farmers' Chronicle* of the past year, also *Ohio Farmer*, for his views on potato culture.]

Mr. Buttles spoke at some length on potatoes and their culture. He had tested a large number of varieties; results about the same as given in report of committee and by other speakers. He had tried the Vandervere potato, and it seemed to be of little value, either as to yield or quality.

Mr. Bateham said he tried the Vandervere on sandy land the past year, and was well pleased with it, both in quality and yield; should at least try it again.

Mr. Richmond spoke in favor of the old Neshannock, Jersey Peach Blow and Cusco—all popular and good for market with him.

Mr. Elliott and Dr. Warder gave their views on potatoes with the rest, and the Doctor run off on to

Potato Bugs! He said he had found the veritable Colorado Bug along the river banks in his southwest corner of Ohio this season, and it had appeared, in small numbers as yet, in various parts of Indiana; so that it is possible we are to be speedily scourged with this worst of all enemies of the potato crop. There is some prospect, however, that this insect is meeting insect foes which are opposing its progress eastward, and that its visitation this way may not be very severe or lasting. It is possible, too, that the climate or other influences may tend to check its increase this way.

Mr. Storrs gave some account of his observations of the bug in Iowa three or four years ago, when it was quite destructive to the potato crop in that State and Kansas.

ON METEOROLOGY AND GRAPE ROT.

BY G. C. HUNTINGTON, KELLEY'S ISLAND, OHIO.

The following is the Essay referred to on page 25, read at the annual meeting of the Lake Shore Grape Growers' Association:

A great many theories have been propounded within the last few years, which in the opinion of their several authors, at least, are deemed sufficient to account for the rot in grapes, which has evidently been on the increase for several years. None of these theories, so far as I have observed, have been accepted by practical grape-growers as a body, as throwing any particular light on this interesting and important subject. On the contrary, I have not yet noticed a single theory which has stood the test, when confronted with facts, within the reach of any practical grape-grower, who observes and examines carefully, without prejudice—not with the view of sustaining some preconceived theory in which he may feel an interest—but with the sole object of arriving at the truth. Until the experience of the last season showed the contrary, the notion prevailed quite generally that too much rain during the summer months was the sole cause of the difficulty. Unfortunately, however, for this theory the rain fall for the past season was below the average for the last ten years, and the grape crop suffered more from rot than in any previous year since grapes have been made a specialty. Consequently we are forced to the conclusion that the cause of rot, whatever it may be, does not lie wholly in that direction. Now, I do not purpose to start a new theory which might at no very distant day be demonstrated by careful observation and experience to be untenable, as all the theories hitherto have been, but I do purpose getting together a sufficient number of facts to show in minute detail exactly what the weather has been during the grape-growing season for the last ten years. Any one can then compare the seasons with each other, and by knowing the seasons when the grape crop was good and when it suffered from rot, will be able to form an intelligent opinion as to how far the weather can be made chargeable for short comings in the crop. I have no sympathy with that class of investigators who first hatch a theory and then set themselves to work looking up facts to sustain it. Every one, as a matter of course, would feel a certain degree of pride in having his particular views sustained. The question is, can such a one be considered an impartial investigator? Would he not be inclined to make his own end of the balance a little the longest? Would he not seize with avidity every fact which would seem to sustain his views, and see much less distinctly, or perhaps ignore altogether whatever would militate against his theory? Unfortunately, this is too often the case. We prefer to take the opposite course first—get together all the facts within our reach which seem to have any bearing on the case under investigation, then from these observed facts deduce our theory, if the facts will warrant such a deduction; if not, we must patiently continue our investigations.

The tables given below will show the mean temperature, rain, cloudiness and sunshine for six months, say May to October, both inclusive, for the last ten years; also the date when grapes come into bloom. This does not occur in this locality before the 20th of June, and some seasons it has been several days later. We may find that a few days delay in coming into blossom may have a very important bearing on the future crop, and since the date of blossoming is determined in a great measure, by the temperature of the month of May, I include that month as properly belonging to the grape-growing season. I have not included November, for the reason that all danger from rot is past before that date, although the harvest may not be completed until two or three weeks later.

The tables are more extended than I could wish, but anything short of this would be of little use. It is not enough for us to know that there were a certain number of rainy days in the aggregate during the season, or that a certain number of inches of rain fell during that time, or that there was more or less sunshine in the aggregate. If in any season there is found to be any unusual deviation from the ordinary course of things, it is all important that we know at what particular time during the season this occurred. A cold, north-easterly rain-storm just at the time when grapes are in blossom might be the cause of a very serious damage to the expected crop by preventing fructification, as was the case two years since. The same storm occurring at any other time during the season might be perfectly harmless. On the other hand, one week of warm, bright sunshine at the time of blossoming might prove a greater benefit to the crop than twice the amount at any other time during the year.

I am strongly inclined to the belief that the particular state of the weather during the latter half of June, exercises a very decided influence—be it good or bad—on the coming crop. Every practical grape-grower must have observed that, if the weather is warm and bright at the critical time, his grapes come into blossom at once and altogether, and in the course of one or two days are all out of blow and the grapes set. They will ripen much more uniformly than when, owing to cold and wet weather, they are a week in completing this process. In the latter case, those which set last will never catch up, but will be straggling behind all the season, and he will have a great many green grapes to pick from his clusters when harvesting. We know that throughout the whole domain of nature very much depends upon getting a good start in the world. No person, animal, or plant, brought into the world under very unfavorable circumstances, either from deficient vitality, predisposition to disease, or other causes, can ever hope or expect to enjoy the same degree of health, or the same length of days, as when life is commenced under conditions directly the reverse—everything being right. The results given in the tables are not compiled from data collected from different sources, but every figure is taken from my manuscript journal, in which, three times every day, for ten years, a full record has been made at the hours of 7 A. M., 2 P. M., and 9 P. M., not only of the matters here made use of, but also of atmospheric pressure, force and direction of wind, and all observed casual phenomena, so that should it ever be necessary to pursue this subject more into detail, we have ample data for doing so.

TABLE NO. 1.—*Monthly and aggregate mean temperature for the months named, from* 1859 *to* 1868, *at Kelley's Island, Ohio, in degrees:*

Year.	May.	June.	July.	Aug.	Sept.	Oct.	Mean of 6 mos.
1859	60.00	64.47	73.23	72.14	62.27	49.87	63.66
1860	61.44	68.38	70.69	70.72	61.26	53.40	64.31
1861	53.28	68.43	70.69	71.82	65.28	55.42	64.15
1862	56.83	64.80	73.14	73.39	67.09	54.37	64.94
1863	59.92	66.51	71.42	72.16	62.46	50.14	63.77
1864	59.95	69.71	76.17	75.00	64.41	51.23	66.06
1865	59.26	74.53	71.46	71.88	72.97	53.50	67.26
1866	56.27	69.11	77.57	69.03	62.98	56.18	65.19
1867	52.44	72.39	74.02	74.92	66.82	56.65	66.21
1868	55.94	68.19	81.72	73.03	63.89	50.83	65.60
Means	57.53	68.65	74.01	72.41	64.94	53.16	65.11¼

It will be observed, that so far as temperature is concerned, there is but a slight difference in the means of any one year from the means of the whole period; consequently we cannot charge the temperatures as being the cause of our troubles.

TABLE NO. 2.—*Showing the number of days on which rain fell, and the amount of water, in inches and hundredths, during the months named, for the years* 1859 *to* 1868, *both inclusive, a period of ten years, at Kelley's Island:*

Year.	May.		June.		July.		August.		Sept.		Oct.		Aggregate, 6 mos.	
	Number of days.	Amount.	Number of days.	Amount.	Number of days.	Amount.	Number of days.	Amount.	Number of days.	Amount.	Number of days.	Amount.	Number of days.	Amount.
1859	9	......	9	1.69	2	0.79	5	2.04	5	2.97	8	1.33	38	8.82
1860	8	1.24	6	1.08	9	5.20	8	2.62	7	2.09	8	2.93	46	15.16
1861	10	2.13	6	1.32	9	3.69	10	4.34	7	2.52	10	2.09	52	16.09
1862	9	4.19	11	4 21	13	5 06	6	1.84	7	2.14	9	2.50	55	19.94
1863	5	2.12	8	3.00	7	1.43	8	1.74	5	1.29	10	2.84	43	12.42
1864	11	4.04	3	1.77	8	4.81	7	3.20	10	4.89	10	3.20	49	21.91
1865	9	2.26	9	2.77	14	4.54	9	1.75	11	8.23	7	3 11	59	22.86
1866	8	3.77	14	7.42	9	4.97	12	2.29	15	7.15	8	1.84	66	27.44
1867	12	5.08	5	1.19	10	3.63	2	0.14	5	0.84	6	1.68	40	12.56
1868	5	2.86	9	5.98	2	0.53	5	3.78	9	3 29	3	0.78	33	17.22
Means...	8.6	3.10	8.0	3.04	8.3	3.46	7.2	2 37	8.1	3.54	7.9	2.23	48.10	17.14

TABLE NO. 3.—*Showing the amount of cloudiness, in tenths and hundredths, at Kelley's Island, for the months named, for the last ten years:*

Year.	May.	June.	July.	Aug.	Sept.	Oct.	Mean of 6 mos.
1859	3.86	4.34	2.88	2.93	4.95	5.00	3.99
1860	4.10	3.67	4.50	3.63	4.68	5.71	4.38
1861	4.43	3.54	4.21	3.69	4.59	4.81	4.20
1862	3.62	4.80	3.15	3.71	4.01	5.49	4.13
1863	4.13	3.58	4.41	3.29	4.23	5.99	4.27
1864	4.69	2.94	3.22	3.71	5 20	6.66	4.40
1865	4.92	4 21	5.17	4.16	4 52	5.38	4.73
1866	4.16	4.90	4.54	5 72	6.04	5.85	5.20
1867	6.18	4.23	4.38	3.29	3.38	4.91	4.39
1868	5.65	4.48	3 01	4.35	6.05	5.61	4.86
Means....................	4.57	4.07	3.95	3.85	4.76	5.54	4.46

In explanation of the above table, it will be understood that in making the estimate for cloudiness, the heavens are supposed to be divided into tenths. In the journal entries, 0 signifies perfectly clear, and 10 signifies completely overcast. The smallest amount of cloudiness is counted 1, and the intermediate figures between 1 and 10 show the different gradations between these extremes in tenths, consequently the amount of sunshine is found by subtracting the figure indicating cloudiness, from 10. Thus the mean cloudiness for six months is found to be, by the table, 4.46; this subtracted from 10 leaves 5.54 as the mean amount of sunshine. In estimating cloudiness, all the different varieties of clouds, from the lightest cirrus to the darkest nimbus are included, and are particularly specified in the journal entry, but it would swell the tables inordinately to name them all separately.

A critical examination of table No. 2 will show several striking coincidences between the rain-fall in June in each year and the state of the grape crop in the same year. It will be seen that the mean rain-fall for the month of June for ten years was three inches and four hundredths (3.04). The rain-fall in June, 1859, was but little more than one half of this average, and in June, 1860 and 1861, it was less than one half this average. In each of these three years the grape crop was very good—not rot enough to be noticeable. In June, 1862, the rain-fall was 4.60 inches, which is nearly fifty per cent. greater than the average for ten years. It was in that year, 1862, that the rot first made its appearance. The crop in some vineyards was nearly destroyed; in others the damage was comparatively light. Taking the island as a whole, the yield was estimated at about half a crop. From 1862 to 1866, the rain-fall in June did not in either of these years come up to the June average. In each of these years, say 1863, 1864 and 1865, the grape crop was very good. There was some rot, but not enough to injure the crop very materially, and our grape-growers generally had settled down into the belief that the grape crop was, after all, the safest crop which could be raised. It might occasionally fail—so did wheat, corn, potatoes, and every other field crop—but on the whole, grapes were altogether the most remunerative. In 1866, the rain-fall in June was seven inches and forty-two hundredths (7.42), considerably more than *double* the average for June. In this year, too, the grape crop was very badly injured, the aggregate yield not being more than one-fourth to one-third a crop. This brought a good deal of discouragement to many grape.men. Some were almost inclined to believe that the crop would no longer be remunerative.

The next year brought a change for the better, and revived the drooping spirits of the despondent. The fall of rain in June that year, 1867, was but one inch and nineteen hundredths (1.19), or considerably less than one-half the June average. The crop that year, although somewhat diminished in quantity, was the best in quality we have ever had, and the quantity, though not equal to some previous years, was probably as large as is consistent with thorough ripening. The next year, 1868, brought another change, and well nigh brought discouragement to many who had hitherto been hopeful. The rain-fall in June that year was five inches and ninety-eight hundredths (5.98)—lacking but two one-hundredths of being double the June average. As to the crop of that year, the result is fresh in the minds of all interested. It is sufficient to say that in this locality it came the nearest to a failure of anything we have hitherto known. Now can all these things be called coincidences, merely? We see during a period of ten years, a certain sequence of events, a good grape crop following a dry June, and a poor crop following a wet June. There has not been a single exception during the whole period. May we not, therefore, without presumption, begin to look upon these sequences not merely as coincidences, but, to a certain extent, as cause and effect. They would certainly seem to sustain the opinion previously hazarded, that a great deal more depended on the *when* than on the *how much* rain fell during the grape-growing season. We do not wish to be understood as advancing this as a theory which will wholly account for the rot in grapes; far from it. But we do think it is a step in the right direction. It may prove one of the causes, and by continued vigilance and oft-repeated observations, we may in time discover another and still another of these sequences, and in the course of time get to understand the laws governing these things; then we may possibly be able to apply the proper remedy. At any rate, no judicious physician would ever attempt to prescribe for a patient until he knew something of the disease with which his patient was afflicted, and the predisposing cause, if any, of such disease.

To be consistent with the plan of investigation previously laid down, we will now look on the other side, and see if we can find objections sufficient in number and weight to overthrow the theory, if such it may be called, which we have indicated above. The first question asked would probably be, if the rot is consequent upon excessive rains in June, how is it that all vineyards are not affected alike? This at first would seem to be a serious objection, for we know that all vineyards are not affected to the same extent. Instead, however, of this fact being an objection, it will, on a closer examination, rather tend to confirm it. It has already been mentioned that the most critical time during the season is the latter half of the month of June. In this particular locality it may be narrowed down to ten days, say from the 18th to the 28th, and it must be borne in mind that all our remarks are confined to this locality. In some localities the time of blossoming may be from one to two weeks earlier than here, in which case the grapes in such locality would be out of blossom and entirely out of harm's way; and a rain storm which would take our grapes when in blossom and blast them, or prevent fructification, would pass harmlessly by those which had passed this critical period. Even in the same locality the same thing will hold good. Grapes planted on loose, warm, gravelly loam, will blossom from one to two days earlier than in an adjoining vineyard set in hard, compact clay. Thus one may escape what would cause serious damage to the other.

We will now proceed to show that in the years when our grapes have suffered from excessive rains in June, these rains have occurred within the ten days named—say between the 18th and 28th of the month. Thus in June, 1862, the entire rain fall for the month was 4.21 inches, of which

2.82 inches, or more than one-half, fell between the 17th and 28th of the month.

Again, in 1866, the whole amount in June was 7.42 inches, and of this amount 6.41 inches, or more than five-sixths of the whole amount, fell between the 17th and 27th of the month.

Again, in 1868, the whole amount in June was 5.98 inches, and of this 8.71 inches, or more than five-eighths, fell between the 18th and the close of the month.

As to the remaining seven years of the ten covered by the tables—in each of which the grape crop was quite satisfactory—it may suffice to say that the mean rain fall in the latter half of June in these seven years was but forty-one hundredths of an inch (0.41), against four inches and thirty-one hundredths (4.31) which was the mean rain fall of the latter half of June in the three years named in which the grapes suffered most from rot. If these facts are not sufficient to give a reasonable support to the theory we have advanced, I will mention one more and detain you no longer. It has been already stated that the mean rain fall for the six months covered by the tables was less in 1868 than the mean of the same period for ten years; still, grapes rotted badly. We all know how often the remark was made last season, "If dry weather is all that grapes want, we ought surely to have a good crop this year." True enough; but on looking at the tables we find that more than fifty per cent. of the rain-fall for the five months ending October 31st, fell in June. Further comment is surely unnecessary.

CONSTITUTION

OF THE

OHIO STATE HORTICULTURAL SOCIETY.

1st. This Society shall be known as the Ohio State Horticultural Society.

2d. Its object shall be to collect and disseminate information relative to fruits and other horticultural products, and to promote the taste for horticulture and rural embellishments among the people.

3d. Its officers shall be a President, Vice President, Secretary and Treasurer. They shall be elected annually, by ballot, and hold their office until their successors are elected.

4th. The President shall preside and conduct all meetings of the Society, and in his absence the Vice President shall perform the same duties.

5th. The Secretary shall record all doings of the Society, perform all correspondence, and, with the assistance of the President, collate and prepare the annual report and other matters for the public press.

6th. The Treasurer shall collect and hold all funds of the Society, and pay out the same only on an order of the Secretary, countersigned by the President.

7th. The membership fee shall be one dollar per year, and any person may become a member of the Society by forwarding the fee to the Secretary or Treasurer. Each member shall be entitled to a copy of the annual report, when printed, and any other documents that may be printed for the use of the Society.

8th. There shall be an *Ad Interim* committee, consisting of the officers of the Society and four other members, residents of different sections of the State, to be elected annually, whose duty it shall be to observe and take notes of new and rare fruits, the fruit crops, and other matters of interest to the Society, during the season, in their several sections of the State, and report the same at the annual meeting of the Society. This committee shall also hold meetings at such times and places as the President and Secretary may direct, for the inspection of fruits and fruit crops, attending horticultural exhibitions, etc.; a report of the observations of the committee to be published annually with the transactions of the Society.

9th. The annual meeting of the Society shall be held in the month of December, at such time and place as the officers may designate, unless fixed by a vote of the Society, notice of the time and place of the meeting to be sent to each member by the Secretary. At this meeting the President will be expected to deliver an address, and the reports of the *Ad Interim* committee, Secretary and Treasurer, will be read, and the usual business transacted, besides discussion on fruits and other topics.

10th. This constitution may be amended, and by-laws may be adopted for the government of the Society, by a vote of two-thirds of the members present at any regular meeting.

LOCAL HORTICULTURAL SOCIETIES IN OHIO.

The Cincinnati Horticultural Society is the oldest in the State. Colonel W. P. Anderson, President; C. H. Wardlaw, Secretary.

Hocking Valley Horticultural Society has its center at Lancaster. P. B. Ewing, President; S. A. Griswold, Secretary.

Ross County Horticultural Society, at Chillicothe. Dr. Scott, President.

Dayton Horticultural Society is quite vigorous and active. N. Ohmer, President; R. Gundry, Secretary.

Loveland Agricultural and Horticultural Society is located among the fruitful hills of Clermont county. W. C. Pinkham, President.

Moscow Agricultural and Horticultural Society is in another part of the same county. Dr. W. C. Irwin, President; W. Johnston, Secretary.

East Cleveland Horticultural Society was organized in 1868. D. B. Putnam, President; O. D. Ford, Secretary.

Detroit Road Horticultural Club, Cleveland (West side). W. E. Clarke, Secretary.

There are several other township or neighborhood societies and clubs, devoted to the promotion of both agriculture and horticulture. The above are all that have been reported to our Secretary as claiming to be of a horticultural character.

TREASURER'S REPORT—1868.

Received, balance from last report	$299 87	
" appropriation from State	500 00	
" fees of members	80 00	
		$879 87
Paid for wrapping, mailing and postage of 400 copies of report	20 00	
" printing and postage of petitions for State Naturalist	16 00	
" cuts of new apples in reports for 1866 and 1868	12 50	
" expenses of committee to Cleveland, Rockport and Collamer	18 25	
" printing and other expenses at Toledo meeting	8 75	
" expenses of President at committee meetings and as delegate to Canandaigua	74 50	
" expenses of Secretary at committee meetings and as delegate to Pittsburgh, Rochester, etc	96 00	
" expenses of other members of committee	105 00	
" printing circulars and railroad passes for annual meeting	6 50	
" postage on circulars for annual meeting	6 87	
" letter postage and envelopes for year	10 00	
" letter paper and printing letter heads	5 00	
" rent of hall for annual meeting	20 00	
" express and incidentals	6 50	
		405 87
		$474 00
Appropriation to orchard committee		150 00
Balance on hand March 1, 1869		$324 00

☞ Members of the Society who have not paid their annual fee ($1) for 1868 are requested to remit the same, with that for 1869, by mail, to the Secretary; and persons wishing to become members and receive the annual report, etc., can do so on remitting the same fee.

Address M. B. BATEHAM, *Secretary*,
Painesville, Ohio.

OFFICERS AND MEMBERS

OF THE

OHIO STATE HORTICULTURAL SOCIETY,

1869.

President—Dr. J. A. WARDER, Cincinnati.

Vice President—G. W. CAMPBELL, Delaware.

Secretary and Treasurer—M. B. BATEHAM, Painesville.

N. OHMER, Dayton, D. C. RICHMOND, Sandusky, JESSE STORRS, Painesville, W. E. MEARS, Milford,	*Members of the Committee Ad-interim with the above officers.*

Joseph Perkins, Cleveland.
S. D. Harris, "
C. Wiegel, "
J. A. Harris, "
Charles Pease, "
Capt. Jno. Spalding, "
F. R. Elliott, "
S. B. Marshall, "
O. D. Ford, East Cleveland.
Wm. Bradford, "
J. A. Hall, Collamer.
George C. Swan, Collamer.
J. W. Dumham, "
A. B. Buttles, Columbus.
R. G. Hanford, "
H. C. Noble, "
Jas. Westwater, "
G. S. Innis, "
W. A. Platt, "
R. Buchanan, Cincinnati.
W. M. Bates, "
Dr. A. Berry, "
Robt. Burnett, "
J S. Cook, "
Wm. H. Clement, "
Chas. B Foote, "
O. H. Geoffrey, "
George Graham, "
S. S. Jackson, "
J. K. Green, "
George Hoadley, "
Robert Hosea, "

S. L. L'Hommedieu, Cincinnati.
Joseph Longworth, "
George D. Martin, "
W. P. Anderson, "
M. McWilliams, "
J. M. McCullough, "
D. B. Pierson, "
Wm. Stoms, "
E. A. Thompson, "
Henry Gulick, Bevis, Hamilton Co.
Jacob Kemp, Middletown.
R. J. Black, Bremen, Fairfield Co.
J. D. Bruce, Chesterfield, Morrow Co.
R. H. Warder, Cleves, Hamilton Co.
Dr. J. A. Warder, Cleves, "
R. W. Steele, Dayton, Montgomery Co.
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J. H. W. Mumma, Dayton, "
W. F. Heikes, Dayton, "
D. D. Cottom, Dayton, "
Joseph Sigler, McConnellsville.
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C. B. Sweetland, "
F. Pentland, Lockland, Hamilton Co.
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E. F. Ensign, " "
Stephen Boalt, Norwalk.
Giles Boalt, Norwalk.
Z. Phillips, Berlin Heights, Erie Co.
Charles Carpenter, Kelley's Island.
G. C. Huntington, "
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P. T. Cox, Moscow, Clermont Co.
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A. D. Strong, "
Lewis Nicholson, East Rockport.
Dr. J. P. Kirtland, "
J. V. Whitney, Montville, Geauga Co.
M. F. Cowdery, Sandusky.
J. S. Cowdery, "
D. C. Richmond, "
H. B. Lum, "
M. H. Lewis, "
W. H. Mills, "
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E. J. Ferris, Painesville.
C. A. Avery, "
Dr. H. C. Beardslee, "
Jesse Storrs, "
W. F. Greer, "
Raphael Marshall, "
N. P. Bailey, "
M. B. Bateham, "
J. J. Harrison, "
J. T. Warder, Springfield.
J. R. Miller, "
J. D. Clarke, Lancaster.
John Gravett, "
J. S. Snyder, "
J. W. Plumley, Marietta.
W. S. Ward, "
Joseph Wood, "
James Donipace, Perrysburg.
Geo. W. Powers, "
J. W. Ross, "
W. J. McMillan, Toledo.
H. H G. Smith, "
W. R. Morrison, "
A. Fahnestock, "
Samuel Bement, "
W. A. Graham, Zanesville.
H. D. Munson, "
W. J. Townsend, "
W. S. Imlay, "
W. A. Burrows, "
H. G. Andrews, West Zanesville.
S. R. Moore, "
S. Jacob Moore, "
A. G. Newton, Clyde.
M. A. Stevenson, Clyde.
G. W. Campbell, Delaware.
W. H. Husted, "
F. P. Vergon, "
Joshua Howland, Ashland.
A. D. Stahl, Ashland.

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A. Merriman, Granville.
W. P. Kerr, "
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L. Weltz, Wilmington.
G. W. Frost, Lebanon.
N. F. Claypool, Nashport.
G. F. Newton, Millersburg.
S. S. Metcalf, Elyria.
L. D. Griswold, "
Joseph Morris, Cardington.
Joseph Waldorf, Mt. Gilead.
Frank Ford, Ravenna.
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S. D. Palmer, Adrian, Mich.
J. E. Mottier, Northeast, Pa.
Chas. Downing, Newburgh, N. Y.
Alva Bushnell, Iona, near Peekskill, N. Y.
J. Knox, Pittsburgh, Pa.
James Truitt, Quincy, Ky.
Dr. C. W. Spalding, St. Louis, Mo.
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